A Philosophy for the Teacher

BASIL FLETCHER

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A PHILOSOPHY FOR THE TEACHER

A Study of the Child and Human Knowledge

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PART I

The Child

I

The Child

LAST summer I wanted to read slowly some chapters of a rather difficult book, so I took it and a deck-chair out into a field where I thought I should be secure against any interruption. I had been reading quietly in peace when suddenly, through the hedge on my right, there burst almost with the force of an explosion six young children, boys and girls, all between the ages of four and ten. They had not expected to find a grown-up in a chair on the opposite side of the hedge, and recoiled in astonishment. They were so surprised that they fell completely silent, their original dynamic purpose apparently forgotten. I, too, remained quite silent. Then one, a girl, I suppose with the curiosity of her sex, said: 'What are you reading?' I always believe in telling children the truth, even when they don't understand it, so I said: 'This is a book on philosophy.' This was accepted without surprise or comment. I went on reading. The next comment came from the youngest boy. 'I can read,' he said. 'No, he can't,' said the eldest girl. It was time to intervene. 'Let us find out,' I said, 'see if you can read some of the words in my book.' He came shyly up and I pointed with a finger to such simple words as 'to', 'if', and 'it'. He read them correctly. 'You see, I can read,' he said. 'Only words,' the eldest girl explained to me, 'he doesn't know what they mean.' I thought she was being superior, so I invited her to read some of my book to me. She did it surprisingly well, only stumbling over the longest words. 'Do you know what it means?' I asked. 'No, it's too difficult.'

'Yes,' I said, 'reading is difficult. We all have to go ahead a little at a time. Do you like reading?' Two or three children now said in chorus: 'Oh, I love it!' 'Like' is too mild a word for the young child's emotions. But I still used it myself. 'Do you like it the best of all the subjects at school?' 'No. No.' They seemed doubtful. 'What do you like best?' 'Oh, drawing—art,' said the eldest, 'yes, painting and modelling, with clay you know.' They spoke to me now as if I were an idiot. This is a quite charming habit of children because of course at times we all are idiots. I closed my book, took a piece of paper and pencil from my pocket and gave them to the shyest girl, who had not yet spoken. 'Draw me something,' I said. She quickly drew me some patterns with letters that I recognized as 'Marion Richardson' patterns and guessed that this was the method used by her teacher to teach her to write. It was now my turn to boast, so I said: 'I can do these too,' and I took the paper and drew a frieze of sixes. The girl began to get agitated and red in the face. 'No,' she almost shouted at me, 'don't, don't do it like that. If you do, Miss Jones will cross it all out with red pencil.'

I loved that child. She was really concerned lest that awful fate should befall me. I also had an instantaneous picture of Miss Jones. How right her methods were; how wrong her spirit! These children were coming to education along the right road—the road of play. But red pencils at the wrong time and with the wrong intonation were in danger of freezing the vital flow of their energy, just when it might have borne them forward to knowledge and skill.

As soon as their quiet interlude with me was over and the children darted forward again into the sunlight on their mysterious purpose, I reflected how true it was that the approach to any skill in education should be by way of play. This is not the whole of education, as some modernists have suggested. It is not even the greater part. But it should always be the beginning—the gate that opens on to the road. So the first quality that any teacher must possess, if he is ever to be successful in the early stages of his work with children, is the ability to play.

NATURAL EDUCATION

The connexion between education and play goes very deep. In its beginnings education must be similar to the activities through which animals prepare their young for adult life. It is only the higher and the more intelligent animals that play with their young; the bitch that in play snarls and bites her puppies, or the mare that tosses her heels in imaginary fear at the rustling of a tree. There is a connexion between this natural education by play, and the period of dependence of a young animal upon its parents. This period is longest in the case of man; it may even be as long as twenty-one years. In the case of hens it is short; perhaps not more than twenty-one days. In the case of the leaf-cutting wasp it is nothing at all; for its parents die before it is born. The grub of the leaf-cutting wasp is born quite ready to deal with its environment. A fixed set of instinctive responses to stimuli are 'built in' as we should say in modern mechanistic jargon. For this reason its behaviour is almost wholly predictable. Yet it is not an adaptable organism nor highly fitted to survive in times of rapid change. It is almost wholly uneducable and uncreative. The picture for the hen is not quite so gloomy, although most farmers find hens difficult to educate. Man, with his long period of dependence on parents, is highly educable. His mind is plastic because, for him, there exists the possibility of free, spontaneous, unpredictable behaviour. Like his Creator, he can create; it is this that gives him his great constructive and destructive power. Education is thus related directly to man's gift of freedom and creative power.

During the early life of the higher animals, and also of man, the free, creative parts of the mind are best matured through those activities which we lump together under the heading of Play. The reason for this is obvious. In Play man is most free. Play, by definition, is an activity not pursued under compulsion, nor for any end beyond itself. It is the result of capricious choice. The classical master who, when asked the use of learning Greek, said 'None, thank God', was defining a classical education as a natural one. G. B. Shaw stated an important truth when in *John Bull's Other Island* he made one of his characters say that 'Heaven is a place where Work is Play and Play is Life'. In Play we do come near to the divine, for God in His creative activity chooses only because He chooses. One of the most recent and life-giving influences in education has been the recognition of the value of play as a method of learning, especially in early childhood. This influence has in this century transformed and invigorated life in our nursery and infant schools; and it is just beginning to invade the junior school. Its importance as an educational method declines relatively as the child approaches adult life, but all adults should spend part of the day in activities that are undiluted play and they will be happiest when all their work is irradiated by the play spirit. One of the saddest impressions I ever had came at the end of a visit to a mental home, when I realized that I had been among people who had lost the power to play.

If this view of education is correct, then schools should provide children at every age with opportunities to express themselves in the five basic creative arts of dance, music, poetry, art, and drama. All of these require a good deal of space and the collection of much material, but more important to a school than either are teachers who are willing to play with children whilst they also teach them.

Take dancing, for example. Watch children on their way anywhere. They dance as often as they walk. Dancing is a form of play, but it is more than play. It is a spiritual activity. That is to say, when we dance we are not concerned with purely material matters of space and time. Our purpose is not to get from place *a* to place *b*. Even hiking is a rather grim activity compared with dancing. In dancing we are lifted up into that spiritual world which has always two facets. First of all it is the creative expression of some sense of values, or of some emotion of joy or sorrow or feeling for beauty. Then, unless the dance is a *pas seul*, it is a way of giving one's personality to others in the social pattern of a dance, and also of receiving something of their personality in return. This mutuality of receptiveness and surrender of personality is the other facet of the spiritual life which is the life of love. Love and creativeness are the two inter-related aspects of the spiritual life. This is man's true life and his birthright. Anything that helps him to enter upon this life makes his life truer and happier. Watch the faces of children—or grown-ups for that matter—as they play their parts in the give and take of a dance that relates them in a complicated pattern, but that also allows them scope for creative improvisation; and you can see that their faces are alight with happiness. This is how people should live. Recently, on a sunny Sunday afternoon in the beautiful Numedal valley of Norway, I saw one of the best Norwegian folk-dance teams actually creating the figures of a new dance, as the music elicited them from their supple bodies no less than from the reciprocity of their creative and communicating minds. The creative spirit at work in them showed in their faces and spread out even to us who were participating in a reflected way in their happiness. When, in this sense, love and creativeness take hold of the mind, the shapelessness and chaos of the material world become transformed by the beauty and purpose of the spiritual world and reveal it to us.

All of this may seem very remote from little children dancing in a schoolroom, but what is true of dancing is true of all life and all education or else neither has any meaning. There is much truth in the fairy story of the Pied Piper of Hamelin for example. I once saw it re-enacted in a Bristol street. Ann Driver, whose voice over the radio must be known to thousands of English children, was demonstrating her work at the piano to a group of rather elderly teachers. French windows opened on to a little garden and beyond was the street of a Bristol slum. Attracted by the music, a small group of dirty children gathered to listen. With an expressive wave of the fingers Ann invited them to come in. One by one they came in to dance to the music—at first a handful, then others passing by joined them until the room was full of dancing children.

Teachers would always be wise, in planning their work, to arrange it in such a way that for much of the time they can take an active part with the children in any educational activity. During this time they must join in the activity on equal terms, though much more than this will be demanded of them. A group of children wishing to learn the foursome reel of a Scottish dance will expect a teacher to know its movements perfectly. If, in addition, their teacher can dance it with elegance, they, in turn, will catch some of her skill. But, for part of the time, she must enjoy it with them. In this way something of their zest will flow back to her. Many teachers are worn out and become old before their time because they have taught too much and learnt too little from children. I believe there is no school activity so simple or formal that this educational principle cannot in some measure be applied to it. Even the sums set in simple arithmetic lessons should contain a few that the teacher can herself do, with enjoyment, sitting down in a vacant desk, even though it may only be for a few minutes. Even this may bring life into a dull lesson and children will learn more as they enjoy more.

The principle of 'participation' applies with great force in painting and in all the visual arts. The pioneer work of Cizek opened the eyes of European teachers to this truth, and I met it myself in the work of Arthur Lismer, the Curator of the Toronto Art Gallery. He decided to make the spacious halls of his Gallery available to any children in the city who wanted to come in to paint on Saturday mornings. The materials were provided for them, and he and some of his friends came in to paint and to talk with the children who were painting. There was little or no teaching. The experiment was an amazing success. Literally thousands of children came in to draw and paint, and some to become artists of great promise. I also witnessed a similar release of talent two years ago in Africa. I came to a village school in a pastoral tribe far from civilization. It was so poor, it could provide no paper for painting and certainly no paints. I had learnt a little about art materials from the Principal of the Makerere art school in Uganda, so I made a set of brushes from papyrus stems and also a set of colours from various earths and roots. Paper I had to buy. The children in my class had seen almost no European pictures, but they lived close to nature and to animals. I began by painting trees and animals, and very soon the delight of paper and colour and their own understanding of animals produced from them much lively and sensitive work. It had some of the characteristics of European child-art, with perhaps an even stronger love of pattern, but it was also unmistakably African. I had then the strong impression of something being released in the children. Nor was the release limited to the children. Some of the teachers caught the fever and when I revisited the school after an absence of two years I found many of its white stucco walls were covered with large and attractive murals.

All that can be said of art and dance applies also to music. There are few pleasures so satisfying as the pleasure of playing an instrument in an orchestra. Most schools now have a school orchestra. But I often wonder why they only have one orchestra. Surely every child should be in an orchestra appropriate to his age. I am in no position to be critical, but it has sometimes seemed to me that our school music suffers from two weaknesses—first in its lack of emphasis upon rhythm, and secondly because of its mainly imitative character. Both of these points forced themselves on my attention during my brief experiences in an African school. Western music is melodic and sophisticated. African music is strongly rhythmical, and this follows from the great variety of different toned drums and the use of arms and fingers to get from them whole harmonies of rhythms. Should not the introduction to music come to our European children much more forcibly through rhythm than through melody? This thought became connected in my mind with my second criticism. The African's ability to improvise rhythms seemed to me to relate also to his later creative ability to improvise harmonic variations on a simple melodic theme. We have learnt in Europe how to release the creative spirit of childhood in the visual arts, and here we have something to teach the world, but I believe we may have to go to Africa to find out how to do the same creative work in music.

My experience of teaching English has been only a little less slight than my teaching of music, but it has included one or two attempts at the teaching (if I may use that word very loosely) of poetry. I began by applying the same educational principle of play to creative writing, and assumed that young children should begin by writing poetry and only later come to the more difficult art of prose. Mothers know this truth and feed their children on nursery rhymes. A child's first stories, like the story of *The Three Bears*, are strongly rhythmical, and stories, especially when they have a marked literary pattern, come very close to poetry in their early educational value. My children were aged about thirteen and had already spent much time writing compositions, so I used a rather sophisticated method of introducing them to poetry. This was to give them Hugh Lyon's little book *The Discovery of Poetry* to read, and then to write poetry with them. I can only say that the enjoyment I got from reading their poems made this part of my teaching very light work and I cannot resist the temptation of quoting two verses written by this class. Both are by farmers' children who had never written any poetry before; the first is by a withdrawn and dreamy girl; the second by an active boy rather fuller of fun and mischief than the normal.

Summer Fields

The summer trees are blossom ripe
And children play upon the hills.
The meadows sleep in golden light.
The cows watch silently the hills
And dream of ploughmen in the dales
Or of strange windmills on the hills
With fearful hissing flails.

Spring

The clear pure air;
The rolling down;

The wheeling lark
And the running hare.
The chattering brook
And the young green wheat.
The blood runs fast
And the pulses beat.

All that may be claimed for the other arts may be claimed also for drama. Here too the teacher does his best teaching when he is working with a group engaged in the production of a play. Indeed, the scope for joint activities and shared leadership between teachers and pupils is almost greater here than in the other arts. I have myself had less experience of this than of the other arts, though I am always glad that Shakespeare was not introduced to me by a school text but by being given a small part in the production of *As You like It.* In addition, I have often seen pupils, whom I knew well, carried a long way forward in their intellectual and emotional development by the acting of an adult role in a good play.

TECHNICAL EDUCATION

The role of the teacher in all of this work, and particularly in the approach to all knowledge, is that of the artist. But this is not the whole of the story. The pursuit of freedom alone can lead to social irresponsibility. This was probably unconsciously realized by the child in the 'progressive' school who asked her teacher: 'Must we do whatever we like, *all* the time?' Natural education has a parallel in the play of animals. Man, however, is sharply distinguished from all other animals by being a tool-maker. Two things struck me very forcibly on a recent visit to the Danish State Museum in Copenhagen—the delicate beauty of hundreds of very early flint tools, and the fact that the earliest known piece of woven cloth, miraculously preserved in a peat-bog, is of an attractive plaid. A combination of utility and beauty of a very high standard appears to have been present in the very first tools and artefacts of man.

The main purpose of tools and of technical education is to lift man out of the life of incessant toil necessary to secure the mere means of animal survival, and to give him the leisure and means to develop a civilized and cultured life. The emphasis is upon utility and so technical education is at the very opposite extreme from natural education in that it is never disinterested. Once man has decided upon his purposes, upon the ends that will give him the happy life, then technical education will provide him with the means of reaching his goal. And so, just as natural education has its own special danger of social irresponsibility, in technical education there is always present the danger that will serve the destructive as well as the creative purposes of man. This comes about when means are raised above ends; when men are sacrificed to machines; or when the engineer becomes more powerful than the philosopher.

There is also a second danger. Technique always needs to be irradiated by the play spirit; when it is not, its products are at best dull and lifeless; at worst destructive of happiness. But when natural and technical education are linked together and technique is irradiated with the spirit of play, the result is fine craftsmanship. And when standards of craftsmanship are high there develops in a nation those folk arts which make life worth living to quite ordinary people, and also which nourish the great individual artists of a creative period.

Children certainly love to play, but not all the time. They also love to use tools and to make things. One of the things that surprises some adults, who do not realize how much schools have changed since they were young themselves, is to visit an infants' school today and to see children of five and six using hammers and saws with immense concentration to make quite large and complicated objects for their work and play.

There are two special places in a school where the love of tools may be fostered—the garden and the workshop—and all schools whether junior or secondary need both. By a school garden I do not mean a piece of ornamental land designed by adults to suit adult tastes. My school garden would have three parts. The first part would be a piece of wild land—or as wild as I could keep it. This I should, by design, fill as full as I could with many different living things, both plants and animals, of all kinds. This would be my laboratory for the early study of natural science. Somewhere in this I should have a wired-in section for those birds and animals that would otherwise stray. Just such a place exists at Monks Park, Pickwick, Wiltshire, and is loved by the children of Pickwick Junior School. My second section would not be wild but planned. Here I would have experimental and seed plots, plant and tree nurseries, and the houses for a variety of domestic animals. My third section would be a flower garden, but like the others designed with the utilitarian motive of providing the school throughout the year with a supply of flowers and leaves for its rooms and corridors.

Such a school garden provides the starting-point for much technical education, and the second starting-point will be found in a workshop where all children can grow proficient in the simpler wood- and metal-working tools. Together, the garden and workshop can in turn provide the necessary, obvious and natural starting-points for a great deal of English and arithmetic. Young children are prepared to go to immense trouble and to spend almost unlimited time in keeping records of facts and numbers. If they are not allowed to do this in a rational and useful way at school they will do it in irrational and useless ways. I scarcely ever go for a drive now in England without passing a group of children who are simply collecting the numbers of car-plates. I stopped at such a group recently and asked them if at school they were making records of the growth of plants and animals, or the weather, or the movements of stars, or the prices and number of seeds. Unhappily, I found that English and arithmetic mean for them only little green and red books, pieces of paper, and work at desks.

The use of tools and the making of things introduces into education ingredients that are present to some extent in all education, but which appear more forcibly and yet more naturally in technical education than in any other. These are the ingredients of discipline and drudgery. Unless you learn to use a tool properly it will damage you or itself or the materials you are using. This calls for the disciplined learning of a skill, which cannot be done without patient practice and drudgery. Any education that omits these elements of discipline and drudgery is a false and soft education. It will never lead to the kind of happiness which skilled work brings at the end of a difficult and sometimes boring exercise. What is, however, often forgotten is that children, in the main, have powers of endurance in the face of drudgery far greater than adults. Of course there are spoilt children who are exceptions, but I have always found children prepared to accept drudgery if they are given rational reasons for it, and if, also, their teacher has enough imagination to give them a foretaste of the pleasures that will be theirs at the end of their drudgery. I believe it is never possible to overdo the giving of rational explanations to children, nor to brighten too often the austerity of rational thought with imaginative pre-vision of pleasures to come. When I have myself bothered to think out how best to do these two things with a group of children, I have been astonished at the drudgery they will willingly accept. This was proved to me quite recently when I tried the experiment of teaching a class of young girls how to use delicate physical balances. To do this properly you have to follow a certain rigid series of operations a great many times until the skill is unconscious and then, but not until then, delicate weighings can be made with pleasure. Almost all the members of this class were prepared to go on and on with practice until they had attained to the standard of skill that satisfied them. As Solness says to Hilda in Ibsen's *The Master Builder*: 'Have you ever noticed, Hilda, how the impossible seems to beckon and cry aloud to us?' Children can hear this cry aloud of the excellent in craftsmanship, and will struggle to follow it. When they do, it beckons them on and then the teacher does not need to goad or cajole, though he does need to give them a great deal of encouragement when the way is hard.

My experiments with the physical balance taught me one other thing. It was that the majority of children come to a sounder, though a slower, knowledge of theory from practical work with tools than in any other way. The box of weights which goes with a physical balance almost forces a child to learn to use decimal fractions and does so in a vivid and pictorial way. To begin with, all the whole numbers are brass and all the decimal fractions are aluminium, so they are never confused. Then the tenths are large, the hundredths small, and the thousandths smaller pieces of metal. I found at the end of this piece of work that my children moved in the world of decimal fractions with assured confidence. This was thorough learning but it must be admitted it was very slow. In the same time, a parallel class using more orthodox methods had covered three times as much ground. But to 'cover ground' is one of the occupational diseases of those of us who teach. It is a superstition that lingers on from the time when teachers believed that if you gave children facts they would both remember them and know how to use them. I am always grateful for the fact that so much of my own learning has been based on the use of tools, on the need for the slow, if boring, satisfaction that comes with the excellence of craftsmanship.

HUMANIST EDUCATION

Art and technique unite in craftsmanship, but there is a tool of the intellect which leads to craftsmanship of a different order, and this is the Book.

The highest form of education springs from the fact that men invent and largely live in a world of symbols. Symbols are a specialized form of conceptual thought. They enable man to think rationally, and this, together with his free creative powers, enables him first to predict and then to control the future. So he comes to feel that he transcends Time, as in a sense he does; he realizes also that he is a curiously hybrid creature, with a body that ties him to the limited world of matter, space, and time, but with a mind that can soar above these limitations into a spiritual world of love and creative life.

Symbols link together the two worlds of matter and spirit, and they also enable mind to communicate with mind through the medium of unthinking matter. This is what takes place when people speak to each other. Ideas in a speaker are expressed as speech symbols, and these impress their pattern upon sound waves which, in their turn, can be transformed by a hearer into symbols and from symbols to thought. Human speech can be either signalling or communion. Signalling takes place in a purely material world. A good deal of breakfast conversation is at this level. When we say 'Toast' or 'Marmalade' we are simply asking that a piece of matter may be moved from place *a* to place *b* in a short interval of time. We are dealing wholly with a matter–space–time world. As soon as we say 'Marmalade, please' we enter a different world. We recognize the existence of a personality, with free-will, who, unless ingratiated by politeness, may refuse our request. This recognition of personality is a tacit recognition at a lowly level of the existence of a spiritual world. We listen to the sound of a motor-horn in order to know where the motor-car is in space. We do not listen to Leon Goossens playing his oboe in order to find out where he is. Music does not relate to a positional world; it has meaning only in the spiritual world, for it is in such a world only that personality has meaning, and is capable of love and creative activity.

The type of education which helps men to develop their powers of symbolic and conceptual thought may be called humanist education. It is both linguistic and literary. The Trivium was Grammar, Rhetoric, and Dialectic and it was Shakespeare who spoke slightingly of the uneducated man as one who 'hath never fed of the dainties that are bred in a book. He hath not eat paper. He hath not drunk ink. His intellect is not replenished.'

Because it introduces man to a spiritual world, the power of symbolic and conceptual thought gives him a longing for perfection. Once a man has tasted humanist education this longing can never be quite stilled. So the prime mark of a humanist education is the striving after excellence; to know the true; to love and create the beautiful; and to live worthily. It was this love of the highest that came to Europe from Greece and has been the source of the power and strength of the classical contribution to European education ever since. The Greek word *areté* describes this quality best; and the best understanding of the meaning of *areté* is found from the words of the poet Simonides:

> '*Areté* dwells on cliffs that are hard to climb.
> A pure choir surrounds her;
> Nor can she be seen by the eyes of all mortal men,
> But only by him into whose being has come
> Sweat that stings the heart.'

This striving after perfection often sets up its aim in the form of a human ideal, such as the Philosopher-king of Plato. This it is which constitutes the special danger for humanist education. Humanist education, in isolation from other forms of education, can become aristocratic in temper and be concerned more with the formation of an élite than with the education of the people. An awareness of this danger should not, however, blind us to the importance of humanism to a democracy. A democracy needs leaders and needs also to have within it those small creative minorities which act as the spearhead of social advance.

The school which I have been describing so far is one which, as can be readily seen, is designed not so much to provide a number of teachers with a series of identical rooms for their work, but a building that is essentially functional in the sense of being related to the needs of the child for space and materials. To playrooms and workshops I now want to add a library, and a well-arranged and well-used library in which a large group of children can select and read the books of their own choice during periods of the school day set aside for that purpose.

When teachers have taught children to read, and kept their naturally voracious appetite fed and unjaded, the back of the educational task has been broken, for the child can now very largely educate himself.

As my opening incident shows, if nothing goes badly wrong, children reach a point when they love words and long to read. Then occurs that educational miracle; they learn to read; probably the most difficult intellectual feat in the whole of their career. These early reading years between four and eight are very precious. If the will to read is broken or the desire to read is not fed, these lost years will only later be recovered with much pain and labour to all concerned.

It is in the later stages of education, in the secondary school, that children need most help from teachers who are at home in the world of words, both when these are used in conceptual logical thinking and also as the symbols of literary art. Parents who clamour for a 'grammar school' education for their children may be moved by many trivial motives, but in one sense they may know better than teachers or politicians. They realize, perhaps unconsciously, that a grammar school education has about it qualities that they want for their children. Wherever, in the world, practical and academic education are widely divorced and take place in quite different types of secondary school this may be a regrettable necessity produced by the shortage of teachers with a university education, but I believe we delude ourselves if we think that it corresponds to anything so simple or rigid in mental types as the practical and the academic. All children need the mental training that comes from disciplined academic study. All can nourish their spiritual lives from the treasures of human experience stored up in literature, history, and philosophy. Naturally, if some of the slower thinkers are to profit from such work they must be taught in quite small groups of twenty or so, by largely individual methods, under the guidance of teachers who have experienced the discipline and inspiration of university teaching. Until a country has sufficient teachers of the right quality, divisions in secondary education may have to be accepted, but they should be regarded as temporary and every effort made to reduce and finally to eliminate them.

In the secondary school, what I have called natural education and technical education should both continue in forms appropriate to the older age of the children there, and often it does not, but this is, above all, the time for much humanistic education. This has two aspects, the first of which is a training in logical thinking, and either languages or science or both must be systematically studied to give such a training. The other aspect is a training in human understanding from those humane studies where words are used as the symbols which enable men to communicate their love and their creative aspirations. In this second aspect, words are used in a different way from the first—not abstractly, but as symbols which are the condensation of experience—or, to use the words of Nikolai Bukharin, the Russian philosopher, which are 'emotionally coloured unities behind which and in the fold of whose garments, thousands of sensory elements are concealed; but here there is no abstraction from experience as in logic—here experience, doubly concrete, doubly alive, is itself condensed.'

This kind of condensation of experience can bring children a long way towards maturity, and the historical, literary, and philosophical writings which contain it need to be mediated to adolescents by teachers who are themselves artists with words. Only to such teachers will words be alive and so felt to express and respond to the creative quality of the human mind. Such teachers will be able to use the symbols of literature to stir up emotions, ideals, and associations, until black and white marks on paper come to reflect the fire of another world, the spiritual world of creative mind.

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SOCIAL EDUCATION

Whether the child at school is in playroom, garden, workshop, or library he is never being educated just as an individual. He is always getting some kind of social education. This means that the teacher must also be an artist in community life.

Social education is important because man, like most animals, is gregarious, although his group life has the special human character that it is crystallized in social institutions which grow and endure. Man comes to feel not only a love of, but a responsibility for, the institutions that carry forward from generation to generation the creative works of the past. He feels the need, therefore, to pass on to the rising generation all his heritage of knowledge and skill, of custom and tradition. The education of primitive peoples is predominantly social and there is much emphasis on social conformity and the obedient acceptance of the pattern of tribal life.

It is not necessary to be an artist in community life to realize that at different ages children work and play best in groups of different sizes. In the free and spacious conditions of life in most of our modern infants' schools, and in some of our junior schools as well, we have learnt that small children work and play best in small groups of from three to five. By the age of eleven a group of ten seems a better working-group, and it is worthy of note that Baden-Powell took a group of this size as the basic group or 'patrol' in his organization of Scouts and Guides. During adolescence a loyalty to a larger group seems to be necessary, and the 'House' or group of about fifty is found to be a very useful social group for the secondary school for some purposes. There will also be certain school activities such as listening to music, watching a play, private study, or library reading when quite large groups can be under the supervision of very few members of a school staff, whilst the remainder are divided into smaller groups than the normal class of forty or more. This kind of varied and differentiated group life in a school calls for a high degree of skill in organization by its teachers, but some schools do not find this impossible. The easiest solution is simply to divide the number of children by the number of teachers and to apply this group organization uniformly to all activities over a wide age-range. This corresponds to a simple arithmetical truth, but certainly to no other truth about child nature or social education.

The mechanics of group life are important but can only be a starting-point. The chief difficulty for the teacher in fostering group spirit is to know when to lead himself and when to yield place to the natural group leaders who are thrown up wherever group activities are organized. Even in attempting to strike a balance and to share his responsibilities with child-leaders, the teacher both lightens his task and finds joy in watching the development of personality that follows as individuals strive to resolve the conflict between their aggressive individualism and the demands of society. Social development is a very important part of education. Imprisoned in the narrow circle of his own life, the individualist is of all men the most miserable. We all long to share our lives with others, to blunt our consciousness of ourselves by thinking, feeling, and willing with others in creative group activity. We need each other, not only that by co-operation the material necessities of life may be produced in rich profusion, but also because of the essential mutuality of personality.

Social education, which can be so potent for good, can also degenerate into political indoctrination and this danger exists wherever the State is thought of as the ultimate seat of authority, When men lose their faith in a personal God there is nothing to prevent the growth of a worship of organized human society or of the semi-divine 'Leader'. If the highest source of values is thought to be the State or the People, then sooner or later all values become debased. Fortunately, we of this generation have seen that State worship leads in time to the horrors of the concentration camp, and so are readier to believe that Caesar and God must equally be served, if individual rights and human freedoms are not quickly to disappear.

RELIGIOUS EDUCATION

If education is thought of as a purely secular pursuit, or as one of the goods of the welfare state, or as unrelated to man's eternal destiny, then all will get out of balance. Natural education with its emphasis upon freedom will lead to a fragmenting individualism, unless it is balanced by the religious view that man should not only develop in accordance with his inner nature, but also by seeking to know the purposes of God, and, by obedience to them, finding the true way of self-development.

Technical education can also lead men astray. The nineteenth century saw the beginning of the steam age, when the invention of machines of all kinds produced a rapid and accelerating tempo of material progress as well as a new emphasis upon technical education. This progress and the ethics of an acquisitive society began that reversal of ends and means which did not stop until it had destroyed much of the beauty of eighteenth-century England. Many thousands of happy countrymen were taken from their pleasant villages to work underground or to be massed in cities and degraded by the ugliness of an 'asphalt culture'. Machines could have made leisure universal. Instead they made it possible for man to fill his life with mere activity; an activity that enslaved him to the life of things rather than ideas; so that instead of being released from the drudgery of the purely material life, he was plunged deeper into it than the savage with no tool but a stone axe. Driving this mechanistic progress forward was a science cut off from the world of values; a science, which in the opinion of Professor Butterfield, the historian, 'has been cut adrift and is being propagated apart from its spiritual setting and so has become destructive'.

In the nineteenth century also there were influences that bore upon a movement of social education and brought it rapidly into the service of the new nation-states of Europe. In this century the economically and military self-sufficient nation-state was emerging as the dominant form of political organization in Europe. At the same time there was a wide acceptance, particularly in the universities, of the philosophy of Hegel, and this also was an influence that raised the nation to a position of ultimate authority. So there arose many men, such as La Chalotais in France, Fichte in Germany, and Mann in America, who worked to establish secular school-systems which should be the means of realizing nationalist aspirations. In England a particular structure of democratic government and the strong influence of religion in education prevented the national system of education from falling into the control of the particular group of politicians who happened to be in charge of the levers of government. But this was not so often the case elsewhere, and all too frequently politics came to control education, until in the end in one country after another education was replaced by ideological indoctrination.

In the post-Renaissance period, as soon as the early enthusiasm of humanism had waned, a secular spirit could not prevent the growth of those undesirable elements, which in humanist education always tend to produce the aloofness of an aristocratic temper. Very early, Ciceronian Latin, the Latin of the scholars, came to replace ecclesiastical Latin and by making this the language of the intelligentsia, did something to destroy a unity of Europe which had been based partly upon the lingua franca of ecclesiastical Latin. The same aristocratic temper was to be found in the schools of the French rational humanists who, in their egoism, called themselves the *Illuminati*. One result of this was that their age, which indeed began as an Age of Enlightenment, nevertheless ended in a darkness so great that in many countries even the vision of human dignity itself was lost.

During the three centuries in which natural, technical, social, and humanist movements in education grew into exaggerated and isolated forms, the idea of a Christian education was by no means lost, and Christian initiatives in education were many and powerful. In England William Tyndale translated the New Testament into words of such beauty and force that within a few years they were daily on the lips of people. Writing of this translation G. M. Trevelyan says: 'The authority of this austere and melodious literature was unique and universal. Plunging into this vast miscellany the people of England wandered at their own sweet will unshepherded and unfettered and finding by the way lessons for the conduct of life.' The effect on education was prodigious; for to be able to read the Bible, children had to be taught. This inspired the Puritan movement in education and fanned the flames of the anti-clerical revolt and the rise of Dissent. The followers of George Fox and John Wesley glowed with educational zeal. In the reign of Queen Anne, the Anglicans, not to be outdone by Dissenters whom they partly despised, set on foot a Charity School Movement that inspired a great volume of local interest and effort. And when this movement flagged, the religious zeal of Anglicans and Dissenters flowed into those two Societies, the National and the British, whose schools were the forerunners of our modern national schools. Later still, with the growth of toleration, Roman Catholics were set free to work out the Christian aim in education.

Whenever Christians have founded schools in an attempt to realize the three aims of Christian education, i.e. the spreading of the gospel, the development of the spiritual life, and the preparation for adult membership of a religious society, the education provided has always had certain marks that have distinguished it from secular education.

The first distinguishing mark of the Christian school comes from the worship which forms a natural part of its life. Worship is not something added to the curriculum, as an afterthought, as it were; it is something that is taken for granted, and this spirit influences in a subtle way all the activities of the school.

In the second place, the curriculum of the Christian school is determined by the principle of the injunction 'Seek ye first the Kingdom of God and all these things shall be added unto you'. In other words, the worth of any study is related to the degree to which it leads a child to a greater knowledge of the nature and purpose of God. The principle is a difficult one to follow, but it gives to the curriculum of the Christian school a character which is not present in the secular school. Every subject in the curriculum can then be regarded as a study of some aspect of 'religious' knowledge; Science as a study of the world of God's creation and the logical laws that lead to truth; History as the unfolding of a divine purpose in Time; Art as the revelation of divine beauty; and every subject as offering some insight into the mind and purpose of God.

The third mark of the Christian school is the special character of its community life, which represents the attempt of the staff to work out in terms of a juvenile society the Christian belief that God is Love, and love is both the source of life and the true way of life. The Christian view of the world is that it contains the strong and the weak, the clever and the foolish, the hale and the sick. It sets out the terms on which they can live together; which are that the strong must bear the burdens of the weak. If children are to learn this truth then the strong and weak, the clever and the stupid, must live side by side in the same community.

Love as a way of life demands rather more of the teacher than that he should formulate and safeguard the simple ethical rules of a school society. All schools have to work to some rules, and are therefore places where children learn something about morality. Lawlessness only means licence and anarchy. But the danger of all social ethics is that it is concerned with the abstract norm of the good, and does not care enough about the individual person and his intimate inner life. Unless teachers are artists they will try to turn children into automata of virtue. Some will be so turned, but others will rebel against the intolerable dullness of virtue. In the Christian school the individual must take precedence of law, because Personality has an unconditional value. Every person is unique, and hence every moral problem demands a personal solution in the Christian school.

It is a mistake to suppose that human creativeness is limited to the sphere of art. In the moral sphere man is also called upon to create. This call to moral creativeness is one that adolescents are very ready to hear because it leads to an ethics of exuberance and not of austerity. Even evil can then be seen as something not merely to be attacked and crushed, but as something to be creatively transfigured. This is indeed the new ethic of Christianity, the good news, the call to the joyful life of love and creative activity which is implicit in all the words of Jesus of Nazareth. It is for this reason that children in schools should read these words, more particularly in these days when they are read so little in the home. They can then respond to the attraction of a personality that blazes out in true creativeness and in a life of self-giving that is also a life of self-enhancement.

Happy are we if any of us can at moments share the artist's power to awaken children to the creative response to life and to the idea of a generous outpouring of our selves to others in love. And even if we fail, the attempts to succeed may at the very worst save some children from the only serious blindness, which is the illusion that they know; and it may prevent others from reading their own meaning into the universe and, with the ingenuity of a madman, fitting everything into a scheme which they have made up for themselves, or have borrowed from others who are just as blind as they are.

2

The Need for a Philosophy

ALMOST every philosopher, like Plato, is a reformer of society, and hence an educator and a teacher of teachers. Plato saw that, judged by the ideals of his Republic, Athenian democracy was corrupt, with a corruption springing from faults in the upbringing of its citizens. He argued that if teachers were better philosophers; if they could more clearly conceive their aims, and identify themselves with the absolute rather than the contingent, this might all be changed. The same might be said of Milton, Locke, Comenius, Whitehead, Dewey, and many other philosophers.

Every thoughtful teacher tries to work out his personal philosophy, his beliefs, and his ideals to achieve clarity in his aims and consistency in his efforts. Educational institutions of today and yesterday cannot be understood except in terms of the philosophy implicit in them. Without a philosophy of education teachers will be swayed by the most recent fashions in teaching. A philosophical understanding of the unity of knowledge corrects such biases and distortions. The adult who has never faced fundamental issues of value, in a world full of conflicts, is an immature and incompetent guide of the young; for the widening of the horizon that comes with philosophic study helps greatly to give emotional maturity.

Because life is full of activity, involving choice and selective judgement, the teacher cannot avoid having some philosophy. If he says he has none he deceives himself. Even to refuse to guide choices by any consistent sense of purpose, is to have a belief in purposelessness. Choices may be quite random, or they may be the result of inner or outer compulsions, or they may be the result of conscious decision arising out of a sense of ultimate purpose. The teacher, of all men, cannot avoid the life of decision. Even in the most bureaucratic of educational systems, he is a kind of king in his classroom and free to choose what he will teach. The world is so full of 'a number of things', there is such lush richness of material that he must all the time select. He cannot teach the whole of history, or the totality of literature; he can begin the study of mechanics with either the lever or space travel. He has little more time than to open a few windows on the world 'and show the children to the fields and all the world, azure on her sands. And let their tongues run naked into books, the white and green leaves open, the history theirs, whose language is the sun.'

Even when syllabuses are dictated from above, the teacher always has freedom to decide how he will teach, to select from this method or that, the direct method of teaching languages or the grammatical; and in answering the perpetual question 'why', which his children will constantly raise unless he has killed their curiosity, he himself must decide how and with what gradualness he can lead them on from simpler to deeper truths. Unless he continually encourages children to ask the question 'why' and keeps alive their own need of purposes by his own reference to them, his teaching will differ little from propaganda, for propaganda is the passing on of selected ideas, together with the suppression of all such curious questioning as asks for reasons why the ideas selected may be regarded as true or important.

In the absence of any strong sense of purpose in the mind of the teacher, the directing purposes of others, or social custom, or prejudice, will decide what is taught, and how and why.

Random choices and weak sense of purpose create the kind of environment which conduces to the development of neurotics. In an unstable world, children do not know where they are nor what to expect, and so grow insecure. An underlying sense of purpose in the mind of their teacher, even although it may not be expressed explicitly, gives a quiet confidence to children and in such an atmosphere their minds can grow.

The careers of some teachers are short, but the majority give it all the years of their working life, and there is a danger for the adult who is in constant association with immature minds that his own mind will cease to grow. He may become a man amongst children, but a child amongst men. The repetition of lessons taught many times may dull the mind as the years pass, unless he sees his work as the expression of a conscious purpose. Because of original sin and faulty upbringing, children often oppose to his attempts to lead them on the difficult path to maturity a stubborn resistance, a determined effort to remain childish and immature. This imposes on the teacher a severe spiritual burden unless his will is strengthened by a sense of purpose. Some teachers rebel themselves against discipline and authority, make no attempt to carry this burden and rationalize their sloth or cowardice by theories of 'free discipline' or 'progressive' education.

Then there are those who belittle all attempts to help teachers to build up a philosophy of their own by their assumption that it does not produce any practical effectiveness in real life. But this concept of 'effectiveness' is never examined; too often it stands for a miserable spiritual provinciality of outlook. In the long run philosophy does have profound practical effects, but such effects as there may be are attained only if 'effects' are for considerable periods forgotten in the pursuit of ideas for the love of it. Anything else results in what Santayana calls the 'dominance of the foreground'; a kind of spiritual myopia. And the teacher without any philosophy in him is, to quote William James, 'the most inauspicious of all human companions'.

It is in periods of contemplative insight that we become aware of the limitless potentialities of the human mind. Only in the light of this can any attempt be made by the teacher to develop the human potentialities of the child.

The teacher needs to recollect constantly the advice 'Be ye perfect, even as your Father in heaven is perfect', for however much they may deny it, men are always driven by this longing for perfection. They seek it and respond to it in all art, music, drama, and poetry. They find it in the perfection of mathematical symbolism. They nearly reach it in the mechanical perfection of an aeroplane or a rocket; and they ask for it, but rarely find it, in absolute justice and the ideal society. To accept the possibility of perfection for oneself leads to self-respect and respect for the value of work done. This acceptance is not egoism. Egoism is the refusal to see that there is the possibility of perfection in others, even in the 'paper-seeming boy with rat's eyes, the stunted unlucky heir of twisted bones, reciting a father's gnarled diseases, his lesson from the desk', as Auden wrote.

To see this potentiality of perfection in another, piercing through all disguises, is to have the gift of love. Love is not blind; it is keenly aware of imperfection; but it can see beyond it to what might be. To see the potentiality is not to rest in the delight of the gift of love; it is a call to creative action; to cut away the obstacles that stand in the way of its growth; and to offset the consequence of 'a father's gnarled diseases' by self-sacrificing service. All parents and teachers desire to retain such a vision of perfection, but most have it only in flashes. To give it more continuity and steadiness, a study of philosophy and a willing acceptance of its discipline can be a very great help.

THE NATURE OF PHILOSOPHY

The word 'Philosopher' simply means a lover of wisdom, and to the Greeks the first thing a man had to do if he was to become wise was to seek the Truth. Plato defined a philosopher as one who comes to see the Reality of life as contrasted with the man who dwells on Appearances or the shows of sense, and this contrast between Reality and Appearance was central to all of Plato's thinking.

The humility demanded of philosophers by Socrates was rather like the humility which Christ demanded of His disciples. Only the childlike and questioning attitude of the humble man would lead him to truth. It is the 'meek' who inherit the earth, i.e. the meek in the sense of those humble enough to acknowledge their ignorance and dependence on God, and then who are prepared to sit down to study carefully the world He has made and the way it works. Nature reveals her secrets only to her lovers. So, in the modern world, it is the scientists in their humble searches who have discovered penicillin in the obscure moulds that grow on decaying vegetable matter, or how atomic energy can be gained from sea-water. To the Greek philosophers the greatest moral evil was *hubris* or pride, just as it was to the Christians.

The most powerful influences in the early days of philosophy came from three philosophers—Pythagoras, Plato, and Aristotle. For Aristotle, as for Plato, the beginning of all philosophy was wonder and curiosity about the nature of things, and the desire to know for its own sake. For the Italian, Pythagoras, the question was put more in the form 'How may I rise above this frail bodily life that ends in death, and become creative, like God Himself?' These two questions concerning the reality of the material universe and the ultimate destiny of man are the two recurring themes in all philosophy.

PYTHAGORAS

Pythagoras, known to every schoolboy for his famous Theorem, founded a philosophical school, the Pythagorean Brotherhood at Crotona in South Italy in 530 B.C. This School combined philosophy with the religious movement known as Orphism. Orphism was fundamentally a religion with baptismal entry and an ascetic way of life. It recognized that man was a strange hybrid creature, a blend of the earthy and the divine, and the Orphic way of life was designed to secure the release of the divine element from its imprisonment in the body. Pythagoras used or invented the word 'mathematics' to describe his religious interests in form and number, from which developed both geometry and arithmetic. The laws of these two Sciences he regarded as part of the divine pattern of the universe.

It is interesting that the Pythagoreans were convinced that the number 4, the tetrad, was in some way of especial importance as part of the divine pattern in the material world. They had a Prayer to the Number Four:

> Bless us, Divine number, thou who createst Gods and Men.
> O, holy, holy Tetraktys,
> Thou that containest
> The root and source of the eternally changing creation.

It was not until the middle of the nineteenth century that

Hamilton returned to the discovery of the immense importance to mathematics of calculations based on the number 4 or on sets of four, which he called Quaternions. He was led to this by his wondering if it was possible to find the square root of a minus number like — 1. He linked this with geometry by the use of what were called Vectors, or directed lines, and with algebra by the use of what are called 'imaginary' numbers. This led on to his use of patterns of four symbols, i.e. A.B.C.D. All of this was very abstract and related to the Theory of Numbers, but the strange thing was that it turned out to be exactly the kind of mathematics which Einstein needed thirty years later when he began to develop his Theory of Relativity. The particular reason for this was that Einstein saw that the behaviour of material things travelling with velocities far beyond anything we know, i.e. velocities of thousands of miles a second, can only be explained if what we call the three dimensions of height, length, and breadth, are combined with a fourth, the dimension of time, in a composite 'space-time continuum' of which each is a partial aspect. In this four-dimensional space-time continuum the symbols a, b, c, d could be used to represent the four dimensions in quaternion mathematics. At once a fresh and revealing light was shed on the whole of the mathematical treatment of physics. It was, in fact, the first step in a development which was to lead, forty years later, to the discovery of atomic energy and man's powers to destroy his civilization. The second step was the invention of wave-mechanics and the Quantum Theory, which substituted for the study of particles, the study of wave-patterns that proved to be in many ways more fundamental than the hard material particles, of which, before this, materialistic scientists had been so convinced that the universe was composed.

So, in recent years, by way of Quaternions, and in other ways, scientists have moved from the world of 'appearance' to the world of waves, patterns, continua and eternal harmony, or nearer, as the Pythagoreans would have said, to the 'root and source of the eternally flowing creation'.

PLATO

Plato was also profoundly influenced by Orphic thought and this can be seen in his well-known metaphor of 'The Cave', which illustrates his own understanding of the nature of philosophy. The philosopher is likened to a man sitting in a dark cave with his back to shafts of sunlight which stream in from the bright world outside. Events in the outside, sunlit world cast shadows on the wall of the cave, and it is these only that the philosopher can see. This is the world of 'appearance', which we all see. We believe, in a commonsense way, that what we call 'reality' must be like this shadow world and yet more profound and more eternal. Only mystics or religious geniuses seem able to turn to the light without being blinded, or to go outside into the sunlight itself and experience reality; but when they return to those of us who live in the semi-darkness of the cave they can find only broken words in which to describe their ineffable experience. So the philosopher, as distinct from the mystic, has to continue to look at the ever-changing shadows and then by his intellect to study the relationships between them. From this study of relationship he can come to know, although only in part, the nature of the 'divine forms' or 'patterns' of which he sees only the shadows. So, for Plato, it is the intellect which gives man the power to know eternal unchanging truth. This truth is the element of form, order, proportion, and harmony in the universe. Above all, Plato believed that this formal order can be discovered mathematically. 'Things are numbers', said

Pythagoras. 'Let no man enter here who is ignorant of Mathematics,' wrote Plato over the entrance to his Academy—that grove or cloister where he taught his pupils. From these early semi-religious philosophies, a complicated line of historical development leads on to modern mathematical physics and all the marvellous gifts it has given to modern man.

ARISTOTLE

When Plato died in 345 B.C. he left a group of profound philosophers at The Academy to continue his work, but the greatest of these was Aristotle, who had been his pupil and friend there for twenty years. Aristotle was a Greek from Stagira on the north coast of the Aegean Sea. His father was the Court physician to the King of Macedonia, and from his childhood and his early contacts with the members of his father's Medical Guild he inherited a love of biology which was as strong as Plato's love of pure mathematics, and this coloured his philosophy no less. After Plato's death Aristotle moved slowly away from Platonic thinking until his philosophy and the science which grew out of it came in time to be so different that the debate between Platonists and Aristotelians continued to be a major debate, and a very fruitful one, through all the long centuries of European history, and remains so today.

METAPHYSICS

Aristotle called the 'first philosophy' what today we call 'metaphysics' or the study of everything that lies beyond physics, which is the study of the material universe. Metaphysics is the science of the whole, the synthesis of all that is known; of the mind that knows and the way by which it is known. The philosopher then becomes the *synoptikos* or the man able to grasp synoptic or comprehensive views. His aim is to exhibit the universe as a rational system in the harmony of all its parts. He tries to detect relationships between seemingly unrelated events; to formulate the laws or theories or guiding concepts without which no intellectual study can advance. By reflecting on life in all its change he hopes to weave the manifold strands of experience into a pattern, and so to 'see life steadily, and see it whole'.

Experience as it comes to us is general and confused. We have to break it down into parts to see it at all. This process of analysis is essential to any intellectual understanding. We look, not at the forest, but at the leaf of a single tree. We look, not at a whole man's life, but at a single unjust action. This analytic part of philosophical inquiry then needs to be linked to its synthetic part. The most isolated fact of experience cannot be fully known until we know it in relationship to the whole system of the universe. It must be seen—as the Jewish philosopher Spinoza insisted *sub specie aeternitatis*—in the light of all things and all eternity. So also the philosopher in Plato's Cave, looking at the flickering shadows of appearance, detects relationships that can be described and that help him finally to see those divine patterns which these merely foreshadow. So to Aristotle it was the essential business of philosophy to seek diligently the chief relationships that constitute the complex nature of the whole. In this search the three values of Truth, Beauty, and Goodness were seen to be the three aspects of the whole requiring separate attention, and consequently the three studies of Logic, Aesthetics, and Ethics became important subdivisions of Metaphysics.

LOGIC, AESTHETICS, AND ETHICS

Logic is the art of reasoning; the activity of the mind that proceeds by chains of inference from self-evident truths to those that are less self-evident. Earl Russell in his book *Human Knowledge* has given a recent and comprehensive account of this art as it is understood today. Plato and Aristotle meant rather different things by Logic. Plato, in *The Republic*, describes his belief that beyond the perpetual flow of ever-changing appearance there is a world of Divine Forms, which are separated from the world of sense and knowledge only by pure intellect. They include mathematical 'universals' like 'the cube' and moral universals like 'the good'. The process of getting to know this world of Forms, its structure, and the relationship of the Forms to one another, Plato calls Dialectic and this was his own particular logical system. Logic, for him, was the process of analysis and synthesis by which the mind comes to appreciate, for example, the richness of the idea of the Good, as containing within itself all kinds of actual and possible goods. For Aristotle, on the other hand, logic was the study of verbal propositions such as 'All men are liars. Socrates is a Man. Therefore Socrates is a liar.' Such logic operates with symbols, in the form, for example, 'All A is B'; 'C is A'; 'therefore C is B'. That is to say, it tries to work out a method of reaching truth that is independent of the particular people or things about which the truth is sought. From this interest of Aristotle grew the method of deductive and inductive logic which has been the basis of modern science.

Aesthetics is that department of metaphysics which is concerned with the nature of Beauty. What is it in things that makes them beautiful; and what is the relation of this aspect of the universe to its ultimate nature? Is it just an incidental sheen on the surface of ultimate cruelty, like the face of 'La Belle Dame sans Merci' who lured knights to their destruction?—or is it, as Keats wrote, Truth itself?

Ethics is concerned with the nature of Goodness. It discusses the idea of duty as an ultimate end of action. For Plato it is the contemplation of the moral Forms of Justice or Courage that gives man virtue. Virtue is also the application of universal truths to the particular circumstances of this or that problem of social or governmental life. So ethics is concerned with human nature and the relationship of man with his fellows. Aristotle in his *Ethics* wrote very fully on this aspect of philosophy. Once again, in *Ethics*, his approach was different from that of Plato. He was chiefly concerned with man's end or purpose. What is man for? What is his destiny? Man's moral life, he wrote, should form an ordered whole directed to a single end, just as the universe forms an ordered system directed to a single end. Because to Aristotle was denied the vision of the ultimate end of man, as Christ revealed it, so also naturally the ordering of his moral life, as it was described by Aristotle, lacks unity and seems inadequate and narrow when compared with the balance and fullness of the Christian moral code based on the idea of Love. Aristotle thought man's aim was *eudaimonia*, which is best translated by 'well-being' and this, as we shall see later, is a narrower conception than the Christian idea of Love or *agape*.

EPISTEMOLOGY

All of these different departments of metaphysics grew out of the search for an understanding of man's experience. But the ultimate facts of experience for all of us are not objects, but ideas in our heads. This is all we have direct knowledge of. We believe other people exist, and things exist outside our minds; but we have no proof of this. There is a school of philosophy—solipsism—which denies the existence of anything except the ideas in the mind of a single Solipsist. But most philosophers assume that there is a knower—the Subject—and also things known—the Objects. It is this Subject–Object knowledge that leads the philosopher to build up a 'theory of knowledge' or, to use a more technical term, an 'epistemology'. To what extent is the knower quite separate from what he knows? How do we come to know things at all? These are the questions asked by epistemology. John Locke defined epistemology as 'the inquiry into the original certainty and extent of human knowledge, together with the grounds and degrees of belief, opinion and assent'. These are indeed the basic questions with which epistemology is concerned.

ONTOLOGY, PSYCHOLOGY, COSMOLOGY, AND THEOLOGY

Epistemology arises from the eternal human question, How? How do we know? Metaphysics arises from the more insistent question, Why? Why, for what reason do we exist? Ontology, the third philosophical discipline, arises from the question What? What do we know? What is the nature of Being or Existence? After Aristotle, Greek philosophers began to divide Ontology into three studies of Psychology, Cosmology, and Theology, or the studies of the mind of man, of the physical universe, and of the mind of God. After the seventeenth century A.D. these three studies broke away from the completeness of philosophic studies and became separate scientific studies of their own. Today these three separate disciplines are beginning to return to the realm of philosophy. Psychology, as a science, is concerned with the objective study of the mind of man as a succession of states of consciousness—these are tabulated and analysed in the same way as a biologist may study the digestive organs of the ant—and the psychologist then goes on to formulate the scientific laws that enable him to predict behaviour. Today, modern brain-surgery and modern studies of what is called 'para-normal' perception, or the ability of some people to foresee the future, has forced psychologists once again to think about the mysterious connexion between body and mind, and this is essentially a philosophical study.

Similarly, cosmology, or physics and astronomy, as we should describe it today, remained part of philosophy and was called 'natural philosophy' at the European universities until the eighteenth century. Then in the nineteenth and early twentieth centuries it ceased to trouble itself with philosophical questions such as, What is the cause of motion? or What is the nature of time? until Einstein, Planck, Eddington, and other modern physicists and astronomers began to raise again these age-old and still unanswered questions, and until much evidence showed that the universe had a Beginning in Time and so might well have had a Creator.

Theology, as a study of the Supreme Being or God, was an essential part of philosophy so long as philosophers like Plato held the intense religious conviction that the world is directed by an intelligent power to a good end, or like Aristotle who believed that the cause of all change was an Unmoved Mover, the pure and perfect Divine Mind. As soon as Christians began to realize that some truths about God were beyond the grasp of the unaided human intelligence, and that men needed the help of God in the form of 'grace' or of 'revelation', theology became a rather different study and moved out of the ambit of pure philosophy. But whenever attempts were made to reconcile reason and revelation in religion, as for example by St. Thomas Aquinas in the thirteenth century, theology moved into the orbit of philosophy. Today, as with psychology and cosmology, so in the second half of this century, theology is drawing nearer to philosophy. You have, for example, philosophers like Berdyaev writing books that are both profoundly theological as well as philosophical, and astronomers like Whittaker writing books like *Matter and Spirit* that link together cosmology, psychology, and theology.

Once again scientists seek to clarify the meaning of such terms as 'matter', 'time', or 'change', and so return to the thoughts of those who, over the centuries, have in the name of philosophy sought to find the answers to these questions.

POLITICS AND EDUCATION

The idea of the Good was so central to the philosophy of both Plato and Aristotle that it led them on naturally to consider how this might be achieved by man in society. The idea of humanity which has ethical perfection at its core must ultimately be representable as a moral order. So Plato's ideas took shape in *The Republic* as the description of a Utopia, whilst Aristotle's *Politics* is his own description of the ideal state. Since then, all philosophers have attempted some description of the ideal society, for they have all seen that ethics and politics are inseparably connected and that the highest human good can only be realized in society.

It is the study of Politics as a philosophic study that has led all philosophers on to think about Education. The continuance of the good society can only be assured if, through education, each generation is prepared to play its part as citizens of the ideal Republic. So Plato devotes a great deal of attention to the right education of the Guardians or Philosopher-kings who shall govern his Republic; and Aristotle describes in great detail the kind of education needed to produce both rulers and subjects of the ideal city-state.

Some of the ethical problems raised by the broad study of politics cannot be solved apart from the consideration of wider issues that are in fact philosophical. In addition, in the twentieth century, we all labour to find roads through the confused tangle of modern life, in the form of clear ideas and convictions concerning the nature of things. Parents and teachers, therefore, are bound to interest themselves in the great themes of the day, and to try to find out what are the essential ideas that move their contemporary world.

This means that, in addition to all the trouble they must take to increase the knowledge and skill of children in many directions, they must help them to relate new knowledge to some centre of thought which can give coherence to what would otherwise be confusion. This is not always easy in the age of intellectual confusion in which we live. The educated man has to work hard to find some road of positive conviction through the tangle of modern thought. But a growing awareness of scientific truth can lead a man to see that a world of value exists outside the minds that experience it. The over-riding orderliness of the physical universe can also point to the existence of some entity interlocking its constituents into a unitary whole. So, in the end a man can come to relate his own humble purposes to a universal purpose; to the purpose of a mind which, like ours, is concerned to realize value, but which, unlike ours, is neither limited nor mortal.

At this point, philosophy reaches up to theology, and theology leads on to worship. Theology and worship are both part of the life of the educated man, for it is only in moments of self-understanding during worship that he is helped to shed his pride before the vision of the creative power of God. At such times also he sees that all knowledge, however apparently wide and extensive, only gives to mortal man a few fleeting glimpses, through the dark glass of the temporal, of the brightness of the eternal.

The adult who is in contact with adolescents at secondary schools and universities needs more than others to have worked out, or to be engaged in working out, his own philosophy, for at this period of life the young adult is often repelled by the propagandist, but strongly attracted by the genuine seeker after truth.

3

The Nature of Personality

PERSONAL RELATIONS

IN THE education of children it is the quality of personal relations that matters most. It is a job that involves difficult tensions. A teacher has to 'give himself' to his pupils; but equally he has to withhold himself, to be a promoter of activities and an organizer. He has to be a source of security and yet the stimulator of adventure. He must call all the time for initiative, growth towards responsibility and maturity; yet he must also call for obedience; obedience to a situation, the laws of nature, and human nature; and for humility and the self-giving to a larger community. These are not conflicting demands, but they are difficult demands.

Professor H. C. Dent, in his book *To Be a Teacher*, has summarized some of the bad and the good qualities of teachers. This is not easy to do because the profession calls for men and women of many types and diverse natures. So much freedom is given to the teacher—quite rightly, for he is an artist—that he can do his job easily and become lazy, maintaining in his classroom a mental and spiritual vacuum. Many people enter the teaching profession for similar reasons to those who enter the civil service—because it is safe—and so their pupils come to think that a quiet insignificant life is the ideal life. The present conditions under which training colleges recruit their students mean that many have accepted teaching as a second-best choice. These may pass on their frustrations to children. There are those who have been attracted to teaching by sentimental motives—because they 'love' children. These are those who, when their sentimentality has disappeared, become the sadists and the cranks of the profession. There are also the exhibitionists who perpetually perform before a relatively uncritical audience; or the bores who do not even do this and whose drab monotony kills the eagerness, the curiosity and the creativeness of the child. Perhaps worst of all are the insincere; those whose 'special voice' for children, whose hollow breeziness or easy sarcasm trumpets aloud their falsity.

The opposite of all these negatives would add up to the description of a good teacher, and happily there are many such in the profession.

Although human personality cannot be understood except in its totality and like a work of art is often misunderstood if it is analysed and then examined under several partial aspects, there are some such partial aspects which are worth looking at and which enrich understanding, provided always that the uniqueness and unity of the whole is never forgotten.

THE UNIQUENESS OF PERSONALITY

If someone mistakes me for another individual I may faintly resemble, addressing me as Mr. Jones when, in fact, my name is Smith, I sharply resent it. Even identical twins are unlike and prefer to be known as separate individuals. But, imaginatively speaking, there is no reason why the earth should not have been peopled by a race of identical individuals all thinking and acting in complete unison. The very idea is a frightening thought. The realization of such an appalling possibility makes one realize also that in the created universe there is no such thing as identity. Even the electrons or mesons, which until recently were thought of as identical particles existing eternally without change, are now seen to be bundles of 'events', and 'an event' by definition is a unique happening. It is only in the conceptual world of the mind that identity exists. The idea of two may be repeated indefinitely in a series of twos. In the real world no groups of two things are ever identical. What is often repeated in the created world is 'structure' or 'pattern' and it is in this world of the 'related', and not that of the 'ultimate', that something short of uniqueness is able to be understood by the rational mind. Uniqueness, on the other hand, can only be understood intuitively by the unique mind. The kind of understanding necessary when looking at a work of art, or falling in love, or laughing at a joke, is an intuitive one. You cannot explain a joke in rational terms to a man who fails to laugh at it. You cannot understand a love poem if you have never been in love. But because we are all unique personalities we can understand, with limits, the personality of another by the coming together of what is unique in us with what is unique in him.

The uniqueness of personality sharpens as we grow older and as our experience of life adds new depth to personality. This can be perceived even in the look of the human face, which is often a kind of 'window of the soul'. Babies look very much alike and even parents have been known to mistake their own newly born for another. As life proceeds the necessity to act, to initiate, to choose between alternatives in a life of experience that differs from individual to individual slowly engraves its course on our faces and these grow increasingly different from each other. In this life of action we are always looking just a little way ahead. What shall we do this afternoon, or next week, or next year? We live in the present and look a little way into an uncertain future.

It is our senses that tie us to the present. They are constantly receiving messages of light or sound or electrical waves and interpreting them in the brain. Our body ties us to the present because we have to act in the very near future. A merciful mechanism of the mind prevents our remembering most of our past experiences, and we can look only a little way into the future. This prevents us effectively from ever having any real knowledge of the meaning of Time. We live in Time. We are creatures of the moment. We can direct our attention only to a very limited portion of the whole universe when we lift our eyes to the hills or abase them to the dusty track. We cannot look at the totality of events lying in Time. This is the price we pay for the gift of human life and the opportunity to develop our personalities into increasing uniqueness and increasing richness. Most people are surprised if they have good memories—if they can recall what they did or thought a year ago. But the vast mass of our sensual experience passes into oblivion. No one can recall the events of the first two years of his life, and of the first seven years' experience most is beyond recall except in dreams or under hypnosis. This is very peculiar. Why should we forget what we have thought or suffered? It is ours and we have experienced it and no one else. The mechanism which blots out most of our past is a merciful one. We should be incapacitated from action if, always, however dimly, pictures of the past were flickering before our consciousness. From the point of view of the development of personality it sometimes happens that the elderly do 'live too much in the past' as we say; and it is generally an idealized past. The present seems a cold and inhospitable world. To the old, the present generation seems largely delinquent, the fashions ugly, and the graces of life absent, so some retreat from a life of action into a life, an unsatisfactory life, of remembrance of an idealized past. Such people get in the way of progress and inhibit the active and progressive. Equally there are others who live too much in the future, and are so concerned to be certain of enjoying it that they fail to enjoy the present and so hardly live at all.

THE UNITY OF PERSONALITY

Although Memory is so fallible, such as it is, it holds our personality together into a unity. When we wake up after a night's sleep we presume we are the same individual as went to sleep some hours earlier. The person who suffers from a complete loss of memory as a result of a brain injury has a mutilated personality, knows that he is abnormal and that the normal mind has a strong consciousness of unity.

It is not only the mental aspect of our individuality that by means of memory preserves its unity. This is true also of our bodies in a strange way that has only been revealed in the last few years by the development of 'tracer elements', or the so-called 'tagged' atoms of a radioactive isotope. Single atoms of, for example, phosphorus in fish eaten, may be labelled radioactively and their movements accurately followed as they move towards a final position in, say, the bone of the leg. Here they may stay for a few days or even a few weeks but not for very long. Soon they move off and disappear from the body. Only iron atoms in the blood stream stay in the body for periods that need to be measured in years. All the material atoms in the body are continually moving and changing, disappearing and being replaced week by week, so that the material constitution of the body is in constant flux; yet its form or pattern remains unchanged. The body which we call ours retains its outward appearance of absolute permanence from month to month, even scars remaining apparently unchanged. Only the slow change of growth and decay alter imperceptibly its outward appearance as our hair turns to grey and our teeth decay. Where does the 'memory' reside that keeps this nearly permanent pattern unchanged? It is not by any action of our conscious mind that we preserve our physical identity. Yet just as conscious memory binds the experiences of our waking life into a unity, so there must be some sort of unconscious memory that acts on the material particles of our body to impose on them a continuity of form in the face of continual change. To the eye of the physicist the human body is rather like an immense colony of bees, shadowy in outline and continually changing as bees come and go, yet from a distance maintaining a constant pattern of light and shade.

These two difficult questions are therefore posed by our knowledge of the very fallible action of human memory in its retention of the knowledge of past experience, and the constant retention of a fixed, if slowly changing physical pattern, which we call our body. What mental mechanism prevents the mind from recalling past experiences to consciousness at will; and what mental mechanism prevents the body from losing its identity through the span of mortal life?

FREUD AND PSYCHOANALYSIS

These two questions raise a third which holds the key to their answers. An idea which our minds entertain may spend a brief time as the object of our conscious attention and then disappear. Later on it may return to consciousness again. When this happens we do not say 'This is a new idea', but 'This is the old idea back again'. Where is it in the interval? It was the original thinking of a doctor, Sigmund Freud, in the early years of this century, that gave the first answer to this question, and although his answer is now recognized by the majority of psychologists and philosophers as being only partially true, yet it did represent a brilliant new attack on the understanding of hitherto neglected realms of mental behaviour and opened up a quite new chapter in the development of the science of psychology. In answering one of the questions listed above, Freud said that ideas which disappear do not go out of existence. They pass into a state of latency in what he called 'the unconscious mind'. The unconscious mind he then proceeded to examine by special techniques of psychoanalysis or dream analysis, which he invented, perfected, and, as it turned out, often used to cure mental and physical illness. All this is now part of well-known psychological and medical history. But we sometimes forget that traditional psychology at the beginning of the twentieth century was seriously limited to the study of the conscious mind by rational and intellectual methods. Freud and thousands of psychologists who came after him realized how terribly limiting was such a study and how great had been the neglect of the dynamic power of human emotions, particularly in their unconscious influence upon the whole physical and mental life of the individual.

Freud was also the first to describe the structure of the mind in simple terms. The unconscious mind he divided into the preconscious part and the 'id'. The pre-conscious, he said, contains those memories that fairly readily flow back into consciousness. The 'id' Freud reserved for ideas felt by the 'ego' to be unpleasant. These cannot become conscious in the ordinary way; they meet with a strong resistance in the process, and can only be dragged into consciousness by special techniques. These psycho-analytical techniques Freud and his disciples set out to perfect, and discovered that in using them they had found a way to cure much mental illness and some physical illness also. The effect of this was greatly to emphasize the importance of the study of the individual mind in psychology and medicine. Psycho-analytical treatment is essentially individual, but slow and costly, and it may indeed over-emphasize the importance of the individual and under-emphasize the importance of the group. This is shown by the fact that methods of group therapy in mental illness have now been developed and used with great success. 'Structure' is, however, anthropomorphic; hence ideas are not 'in' anything spatial and this is clearly a gross simplification of the truth.

Freud also assumed that as personality developed, the ego developed what he called a 'super-ego'. Emotional drives, particularly to sexual goals, could be prevented by the ego from seeking direct satisfaction, and the mental energy then may be sublimated into other, more acceptable, channels. When this happened the ego itself was modified by the addition of a super-ego. This simple doctrine sometimes led Freud to strange conclusions. A man, he thought, might sublimate his unacceptable sexual love for his father by inventing a Father-God, and this would give his super-ego a false religious quality. This naive reasoning gave Freud a hostile attitude to religion. It needed Carl Jung, one of his followers, to correct this attitude, and Jung has recorded that, in a long clinical experience of psycho-analysis, he is unable to recall a single case of mental illness that was not due in the long run to a lack of a true religious attitude.

Because of their curative powers, the basic ideas of the psycho-analysts have come to be drawn more and more from neurotic and pathological individuals, and the danger now is that they may be applied uncritically to the normal individual. Unfortunately also the early Freudian emphasis upon the unique nature of every individual person has now become submerged beneath a body of general doctrine that is the more powerful because it is expressed in dramatic and imaginative terms. The writings of converts to psycho-analytical doctrine can be as tediously full of generalized concepts such as 'complex', 'rationalization', 'trauma', etc., as the writings of religious fanatics are of biblical metaphors. It is too often assumed that because, in some particular cases of mental illness, children repress incestuous desires for one parent, this is a uniform experience of all children. The result is that the fresh and unbiased reader of psycho-analytical literature finds a narrowness about it that is profoundly unsatisfactory. The human experience described is true within its own limits, but less varied and less unique than normal human experience. In spite of this, there is a great deal in its literature which has helped parents, teachers, doctors, and others to understand more of the structure and working of the mind. It has shown that the ego may be strengthened if it is more consciously aware of the content of a super-ego, of which it is normally only partially aware, and also of the id which is a storehouse of generally wholly unknown instinctive impulses.

JUNG AND THE DYNAMIC NATURE OF MIND

Although modern psychologists continue to use terms like 'ego', 'conscious', and 'unconscious', which seem to imply a certain rigidity of structure in the mind, yet they are well aware of the dynamic quality of the mind. Ideas repressed into the unconscious mind do not stay there unchanged. They grow and associate themselves with other ideas and when they re-emerge are rarely unchanged. We utilize this dynamic nature of the mind when we 'sleep on a problem', deliberately allowing ideas to change, to mature, to crystallize into new patterns whilst we sleep or whilst we continue our conscious life unaware of the growth of our unconscious minds.

This dynamic nature of the mind, and particularly of its unconscious part, may be due to the action of purely mental forces working without the use or interposition of anything physical at all.

There is much evidence that the apparent separateness of minds is not a complete severance. Jung has collected many facts which seem to point to the conclusion that the unconscious part of the minds of separate individuals is linked with a 'collective unconscious', in the same way as islands are connected together below the surface of the sea. The similarities between the dreams, the myths, and the symbols of people widely separated by space and time are too numerous to be merely coincidental. This is also supported by the evidence of what has been called the principle of simultaneous discovery. It is remarkable that for two thousand years after Euclid published his writings, no major advance in geometrical thinking occurred. Then, suddenly, between 1831 and 1834 three people, working in complete isolation, produced almost identical non-Euclidean geometries. These were Bolyai in Hungary, Gauss in Germany, and Lobatchuski in Russia. Bolyai's manuscript was read by Gauss, who wrote to tell him he himself had written an almost identical work. Bolyai refused to believe that Gauss had not stolen his ideas, although the evidence is clear that he had not, and it embittered his life so that he died a disappointed man.

There was a somewhat similar occurrence later in the nineteenth century when A. R. Wallace, an entomologist working in seclusion in Malaya, produced a theory of organic evolution that was so similar to an account written by Charles Darwin, that the latter at first refused to publish his classic *Origin of Species* and only did so when persistently pressed by his friends. Such facts support Goethe's remark: 'Discoveries are made by periods not men.'

Jung's theory would suppose that creative ideas are developed in the collective unconscious and then flow up into more than one individual mind, whenever such individuals do not impose barriers to such an inflow or outflow. This implies that the normal and the healthy state of the mind is to be creative and the outpouring of creative activity in every sphere would be far greater than it is, were it not for a faulty education in homes, school, and society that for so many has built barriers damming up the flow of ideas. We can see how these barriers are built if we consider some period of our life when we know that we were mentally unhealthy and therefore uncreative. Perhaps we have told a lie and live in the fear of its discovery. Schemes for avoiding discovery continually break through into our conscious thinking in a quite repetitive way. Our mind goes round and round in a circle of sterile thought that may sometimes so activate the conscious mind that restful sleep is difficult or impossible. Thinking then becomes obsessive and the mind is distracted from its creative work. All of this we recognize to be abnormal, and if not cured, certain to lead on to a nervous breakdown. By contrast we see that the normal life is the creative life.

Many individuals, even within the limitations and imperfections of a short mortal life, experience in human love both the intense feeling of the uniqueness of the loved person and at the same time a conviction that there is a deep underlying unity between them. With this conviction goes the feeling that this is something which could endure for ever, which goes beyond Time and exists in a timeless reality. Shakespeare wrote of this in his words: 'Love is not Time's fool.' We do have these glimpses of some reality truer than the ever-moving present, which is our usual partial conception of Time; but they are few because a life of activity and decision is the means by which our personality, begun in uniqueness, continues to sharpen and develop its uniqueness through the free creative life by which we seek to transform the material world. This forces us to live a life of active engagement in the world, and unless the past were largely forgotten and the future hidden, it is difficult to see how creatures such as we are could concentrate on the present. It is only the mystical thinkers who have anything more than a fleeting experience of a Timeless reality which includes, but is more than, the merely historical.

THE PURPOSIVE NATURE OF MIND

The healthy mind is naturally creative and dynamic, and this may sometimes be due to the action of forces beyond conscious control, part of the inherent nature of mind itself and ultimately of the creative nature of human beings as created by God. But in addition the mind is dynamic and creative because men pursue purposes that are continually present to them as conscious goals of thought and effort. This striving of the human mind is always to clarify or realize in bodily form the 'values' of truth, beauty, and goodness. The scientist, the artist, and the saint seek to find 'absolute' truth, beauty, or goodness and to the extent to which they do, to express their discoveries by the transfiguration of matter, so that unpatterned matter is transformed into a work of science such as an aeroplane, or a work of art such as a statue, or a work of mercy such as a hospital.

This purposive character of the mind is its normal attribute. Only when this is seen and accepted does a man's life cease to be troubled or frustrated. Sometimes men pursue false goals such as the accumulation of money or the retention of power, but purpose of some kind the mind must have unless it is to wither and die. The strongest and most lasting purpose is the search for the knowledge and expression of the perfect in the three allied, but different, spheres of truth, beauty, and goodness; and in spite of his knowledge of his own limited powers, and the degree to which his own mind falls short of the perfect, man sometimes comes very near to it, as in a Greek Parthenon, or a fugue of Bach, or a Hamiltonian Differential Equation.

Man, in this sense, may well be the summit of creation, for God, having created a being able to visualize perfection and to move towards it, has no need to create anything higher. Yet the 'poor banished children of Eve' know in reality how pitiful are their unaided efforts to reach up to the perfection that they can realize but not achieve.

The realization of perfection, but the inability to achieve it, gives to man's mind an instability that is inseparable from his limited material life. He knows his body is frail, open to disease or accident, and that death is his certain destiny. Some men respond to this realization by the humility of acceptance; others by the pride of *hubris*. The Greeks knew that such pride was intensely destructive. Man can hide his frailty from himself by the illusion of power. So, as Lord Acton wrote, 'all power corrupts and absolute power corrupts absolutely'. Only one power and one vision can prevent the lust for power from gripping man in its egomania, and that is the vision of God which gives him a deep sense of man's dependence upon Him. In his political organization man can create intelligent checks to power and this is the strength of the political organization of the free democracies; but even these checks and balances do not hold for long if religious belief is not there to sustain them.

Man's striving after perfection is also linked with his awareness of a supernatural destiny. This awareness, even when consciously denied, exercises great power over the human mind. It is shown in man's constant concern with death and the possibility of life after death. This can be detected in man's earliest literature, whether of the *Book of the Dead*, or in Euripides' lovely poem about the dance of the Maenads:

> Will they ever come to me again, ever again
> The long, long dances
> On through the dark till the dim stars wane?
> Shall I feel the dew on my throat?
> And the stream of wind in my hair?
> Shall our white feet gleam in the dim expanses?

From this vivid sense of the transitoriness of life, Euripides speaks of that more perfect life

> Beyond the snares and the deadly press
> Onward yet by river and glen
> To the dear lone lands untroubled by men.

Whether it is the utopia of a Plato, or the messianism of a Micah, or the hope of a St. Paul, great literature speaks constantly of this hope; and the most creative periods of human history, whether the Ajanta art in India, or Tang porcelain in China, or the architecture of the age of Pericles, or the cathedrals of the thirteenth century—all flourish best when this hope of immortality is strongest. But if this hope is abandoned, as it is when belief in God is lost, all kinds of lunatic beliefs like Nazism or Stalinism pour in to fill the void.

So a humanism that does not rest on any belief in the existence of a supernatural purpose in the universe, leads in the end to the rejection of a belief in any absolute moral law. And finally the rejection of the moral law leads, as it did in the closing years of the Roman Empire, to the slow dissolution of human society.

On the other hand we have direct knowledge that our own purposes are the most evident expression of our own personality. It follows that, if we can detect a purpose in the physical universe, since this, not being personal, cannot itself have a purpose, what we see must be the purpose of a personal God. And if God is a person, then our knowledge of the possibilities of communication between persons and our glimpse of the truth that 'no man is an island', may lead us to believe that man can know God and come to live in some measure in harmony with His purposes for mankind.

4

The Problem of Discipline

FREEDOM AND AUTHORITY

PARENTS and teachers alike are continually faced with very real and practical problems, often called problems of 'discipline'. They call for human understanding and sympathy, but they also call for clear thinking and intelligent theory. A warm heart and a soft head is not the best equipment for dealing with vigorous and lively young spirits. There will be days when a teacher is fatigued and then his theories and beliefs must be firm if his emotions are not to over-ride understanding. Clear definitions are necessary from the outset, if a theory of freedom and authority is to be developed.

Freedom may be defined as the state in which choice and initiative can be exercised without restraint. Authority may be defined as the influence which maintains order in the life of an individual or of a society. Unrestricted freedom for the individual may, however, lead to egotistical self-inflation or paranoia, whilst unrestricted authority may lead in its turn to slavish self-immolation or suicide. Freedom exercised without any restraint in a society always leads to anarchy, just as authority exercised without restraint leads to tyranny. Clearly, therefore, the tension between these two ideas must be resolved by some third idea. Only the lunatic and the criminal ask for unlimited freedom, and only the tyrant and the sadist ask for unlimited power over the individual.

SELF-DEVELOPMENT

The word freedom has often been used to stand for the free self-development of the child. This raises the question—what sort of 'self' is it that is to be developed? or in relation to what standards is one kind of development to be preferred to another? Equally, the idea of authority has often been used to suggest some pattern of social beliefs which it is expected will be imposed on children. But this in turn raises the question, what sort of society must be regarded as ideal; or by what standards is one kind of society to be preferred to another? What is clearly needed is some criterion of value by which the nature of the 'self' or of the 'society' is to be judged. In any case the claims of self-development and social living frequently conflict, so again some third term is needed to resolve this conflict, and a search for this third term must now be made.

The uncritical acceptance of the claims of self-development in education may lead to a pandering to 'child-interests', which may themselves be ephemeral or copied at second hand from others. 'Self-development' could mean the giving of unbounded rights to the selfish ego of the child. But egoism is always a vice because it is founded on an error about the nature of reality; it assumes that the source of a person's life and being lie within himself. But the truth may well be that he is a created being, the source of his being God, and that only when he has the humility to accept his creatureliness can he develop his best self. Self-development in any case is a notion which by itself can lead to absurdity. It may be completely suicidal, as when the individual feels free to walk in front of a fast-moving car, or completely anti-social, as when a child uses a classroom as a lavatory.

All of this is true, and yet the sympathetic observer of the child is aware of the measure of the truth that lies behind the idea of self-development. Children are capable of spontaneous creative activity that seems to spring from within like a bubbling stream. There is a right time for teaching a child to walk, or to speak, or to read. Every individual has unique potentialities which he is capable of realizing if he is given the freedom in which to grow and to develop his gifts. But the conditions under which this freedom is fruitful are conditions of responsibility. To the responsible person, freedom is creative; to the irresponsible, destructive. But to say this is only to raise the question, responsibility to whom or to what? Since 'values' must be accepted as having authority, the quality of freedom depends on the nature of the order within which it is exercised, and hence on the authority by which this order is maintained. The idea of 'self-development' must therefore always be considered side by side with that of 'authority'.

Children need and enjoy the ordered framework of an active organized life. Without it they are unable to develop enough self-confidence to form the foundation of creativity. The kind of spontaneous self-expression that is found in child art is only the beginning of creativity. Out of it disciplined skill must develop. Knowledge must be acquired, because, for example, knowledge of the traditions and techniques of art widen the field of choice open to the artist, and so his freedom. Life in society restricts the freedom of the individual and outer demands curb his native egoism; but there is a force that can replace inner egoism by altruism and that is the force of love; the love of a person, or of a scheme of values, or of God. This is the form which the resolving idea must take if the tension between freedom and authority is to be lessened.

AUTHORITY

Teachers are older than their children; they should be wiser, and this gives them an authority which they should recognize and demand. They ought to have some knowledge, or skill, or understanding to pass on, which they must pass on. No learning by a pupil can begin unless the pupil makes an act of faith that there is something to learn that is worth learning. Without this degree of respect, both for the teacher and the subject taught, learning is not possible. If a teacher abdicates these responsibilities he merely hands over his rightful authority to the ignorant, the egoists, the immature, maybe even the sadists in his class; and then its weaker members can suffer badly. In one school known to the writer, where a teacher had so surrendered his authority, a child was permanently blinded by a bully in the class. But the idea of obedience to an 'order', maintained by the teacher, is not so emotionally attractive as the idea of 'freedom', and much harm has been done to children in the first half of this century by a sentimental attachment to uncritical ideas of freedom.

Children need to learn the painful lessons of growing into useful, constructive, and unselfish members of an adult society, and they cannot do this unless they learn submission to its authority. Only an education that prepares them for a useful, constructive, even if critical, role in society will be satisfactory. Where there is no such pain of effort there will be flabby degeneration.

In this growth of social understanding, any order that is imposed must not be so rigid or repressive that there is no freedom to make mistakes. Children learn from their errors. Whilst, up to a point, a parent must shield his children from the too disastrous results of harmful mistakes, he must learn to know where to draw the line between protection and spoliation. This will be very difficult unless he himself owes a firm allegiance to a scheme of values, which he accepts as his ultimate authority.

SOCIAL UTILITY

Some educational philosophers have sought to resolve the tension between freedom and authority in terms of the social purpose of society. This indeed is better than an uncritical philosophy of freedom, but at a time of rapid social change it is impossible to educate for 'adjustment' to a society that does not exist or that will certainly be radically different by the time a school generation has become adult.

John Dewey, the American philosopher, whose materialistic philosophy has greatly affected education, asked that education should be for 'life'—or for 'the process of living'. But one has to ask, what does 'life or the process of living' mean? Is it the experience of a meaningless succession of events? What makes one kind of life better than another? Such questions cannot be answered without reference to some dogma about the nature of Man and his destiny in Time. Similarly, does 'education for life' mean the mortal span of years on this planet, or education for 'eternal life'? Education for life must accept any and every manifestation of human life—the life of the dictator as well as the life of the saint. If not, to what criteria can we look?—surely only to those purposes which lie beyond man's mortal life.

There are also two serious objections to the definition of educational aims in terms of either 'adjustment to society' or 'preparation for social living'. Adjustment to society may merely mean the process of breaking in slaves for some police state, or preparing the members of a master-race to murder millions of their fellow citizens, as did the Nazis in the 1930's. Similarly, preparation for social living may greatly narrow the vision of the educationalist so that he sees nothing of timeless realities. Thus if arithmetic is taught to girls solely in order that they may be efficient shoppers, important though this is, it may prevent some ever coming to that appreciation of mathematics for its own sake, which in the long run produces a Madame Curie. Mathematics taught as a creative art, with no sense of social utility, may lead to the release of far greater utility in the end; as has so clearly been demonstrated by the release of atomic energy as a result of the beautiful equations of the quantum theory.

The fact must be accepted, that those people who have contributed most to society are those who have found personal enrichment by some degree of withdrawal from society, in order to immerse themselves in the timeless realities of science, or the values perceived in art, literature, philosophy, or religion.

THE TRANSCENDING OF FREEDOM AND AUTHORITY

Freedom and authority are ideas that can only be reconciled in terms of some idea, which transcends the confined circle of man's egoism and of the temporary social order within which his life is lived. This third term is the acceptance of the timeless laws and cosmic order of the physical world; of the patterned beauty of art, music, and poetry; or of the truths about human nature expressed in history and literature. So children should slowly be brought to give obedience, not to their own fickle impulses, nor to the demands of the State, but to the authority of the subjects they study; the laws of science; the patterns of mathematics; to the human lessons of history, or the truths of religion. In some measure, even to children, and increasingly as they grow older, the various fields of study are seen to have their own internal logic, their order and basis in values that transcend the day-to-day business of living. In our own day, when power tends to fall easily into the hands of a few tyrants, there is a particular need for this reassertion of the traditions of objective law and absolute moral values.

PART II

Human Knowledge

5

Language

ALL parents are teachers and some teachers are parents, but both are engaged in the business of assisting the child to acquire knowledge and the skill to use knowledge. They will be assisted in this work if both understand a little of the origin, scope, and purpose of the main divisions of human knowledge. Of these broad divisions, the most important is undoubtedly that of the study of language.

LANGUAGE STUDY AND THE CHILD

Before a child has learned to speak, education by parents is limited to gestures and action, and the child's thinking must be done without the aid of words. Reasoned thought is almost impossible without the use of words, so that from one point of view the earlier the skills of speech, reading, and writing are learnt the better. Yet this is not the whole truth. If these skills are begun too early, before the child has reached what is now called the age of 'reading readiness', the skills may be learnt slowly, badly, and in the long run this may even lead to backwardness in reading. Certainly it is clear that the teaching of reading at the wrong time, by the wrong methods, is the largest single cause of general school backwardness.

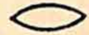
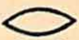
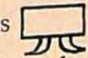
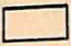
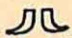
When the mother tongue is established as a medium of thought, and after, say, two years of practice, reading and writing have been learnt as a skill, a second language can profitably be begun, and should be begun, for all children. At the age of eight the speech and reading interests and impulses are still very strong and a foreign language can be learnt more quickly and more permanently than at any later age. Four years' practice in this second language should be sufficient to establish it as a permanent and unconscious skill.

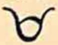
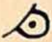
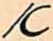
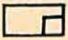
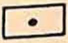
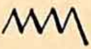
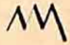
The relationship between language and thought is so close that, especially in the early years of school life, linguistic studies such as drama, poetry, prose, discussion, and choral and individual speech, should take up much of the pupil's time.

THE ORIGINS OF LANGUAGE

The meagre historical evidence available about the condition of early man reveals him as a creature whose power of communication was very far removed from the haphazard cries of animals, even those with large brains; nor can links with these be traced. The manner in which speech developed is one of the unsolved speculative problems of history. The invention of language, when it came, at once made possible a new kind of communication and so a new kind of social life. Writing, which appears contemporaneously with speech, made it possible for social groups to pass on social traditions and so to differentiate still further human from animal societies. Written or spoken symbols are not effective unless their meanings are understood in approximately the same way by a group of people working and living together; and even in a modern society with all the technical means for frequent communication, there may be serious gaps. For example, during the War, a farmer applied to the authorities, in a spirit of mischief, for petrol rations for one tractor and one gelding. An urban clerk sent him five gallons for the first and ten for the second.

Language in its development has been closely associated with development, migrations, separation, and intermixtures of human societies. An interesting speculation concerning the origins of language is whether there was a single centre of origin or several centres. Professor A. Trombelli, of the University of Bologna, in his *Elementi di Glottologia*, presents a strong case for a single origin of language in North India. Words like 'mother', *mater*, or *moder* stem from the Sanskrit *Matr*; and although Polynesian, Sino-Tibetan, Altaic, and Semitic seem so different from Indo-European languages, he traces many connexions and parallelisms even in languages so far apart as Chinese and Bantu.

Another speculation concerns the way in which there was a transformation from a picture to an alphabetic language. It must have been a very quick transformation, because it is very difficult to imagine any intermediate stage which combines a picture symbol with an alphabetic set of symbols to imitate the spoken word. It can be done. For example, stood for water in Egyptian and so this symbol came to be used for the first sound in water. Similarly  meant mouth, which was *ra* in spoken Egyptian, so that in time  came to stand for *r* in any context. Or the hieroglyphic for 'to go' was  where  stood for 'a lake', and  for 'to run', so that originally 'to go' meant 'a running lake'. Hence in the development of alphabets you can trace this kind of growth from picture symbols to an alphabet, as the table below shows.

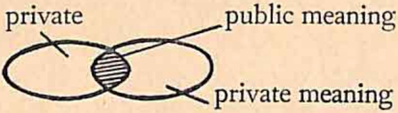
	Egypt	Sinai	Hebrew	Greek	English
Ox				α	a
House				β	b
Water				μ	m

As these symbols show, the alphabet was an invention of that remarkable people the Jews. But the Greeks were the first to develop the use of alphabetic words in the modern manner. In Hebrew the vowels are hinted at by the use of dots and dashes, but it was the Greeks who realized that vowels ought to be written and so made an alphabetic symbolism the perfect type for the communication of thought. In the Far East, the Chinese civilization was prevented from rising to the greatest of levels, particularly in science and literature, though not in the manual arts, because until the present century it has had to struggle, in verbal expression and in education, with a picture symbolism. This involves some thousands of 'characters' that are primitive, obscurantist, and an immense imposition on the memory of the young child in its search for knowledge and skill. For this reason alone, the civilization of the West, and particularly its science and technology, have remained in advance of anything that has yet emerged from the great continent of Asia.

Children who have a strong 'sound' sense and a vivid imagination can be brought to a love of words in various ways, but perhaps the best introduction to this study is by the writing and appreciation of poetry. In poetry you have to choose the perfect word and you cannot, in any line or stanza, substitute any other word for the one used. For this reason poetry is difficult or impossible to translate from one language into another.

Children can also be set to look for the histories of words, and almost the first literary possession of a child should be a good dictionary. Thus it can be found that 'enthusiasm' originally meant 'setting on fire' and that 'nice' meant something different in the eighteenth century from what it does today. On the whole, words tend to grow more abstract and more idealistic as the years pass, as though attempting themselves to help man to rise above his material self to higher things. Thus 'lady' originally meant 'breadmaker' and a 'faculty' was an action-group rather than a group of thinkers. Similarly, the geographical study of words adds to their interest, as when it is found that the drink 'punch' comes from the Hindi *panch* or five—a drink made from five ingredients. Some words can be taken to pieces, as for example, 'notwithstanding', or 'nevertheless', or 'duplicate'. In all these ways language studies can be made exciting and educational.

A more adult study of words derives from the work of Breal in 1897, who invented the term 'Semantics', to stand for the study of the relationship between words and their meanings. Two people who talk, communicate with each other, but this is never perfect, because there is never a complete identity of experience. The words we use relate partly to our private world of thought and partly to a public world of communication. In dialogue we may represent communication in the form of a diagram.



Sometimes, despite torrents of words addressed to us by another, we remain largely shut up in the isolation of our private world; sometimes a few broken words, by a kind of magic extension of personality, enable us to enter into the thought world of another.

The study of semantics has become particularly important in this century, because the immense widening of the horizons of knowledge has led to increasing specialization; thus, to the growth of special private languages used by anthropologists or biologists or physicists. Hence there exists the danger of a serious breakdown in the communication of thought. This can take place with disastrous results in the political sphere if, using a common language, societies like the American and the Russian use such a word as 'democracy' to mean quite different things.

MATHEMATICAL AND VERBAL SYMBOLISM

Philosophers, considering how the minds of individual men come to know the external world, have made use of words such as 'universals', or 'essences', or other generalizations formed by the intellect. But when they come to consider how one mind communicates with another mind they must investigate the nature of symbols, for it is by the invention of symbols that man has learnt the art of communication and by this is marked off from the rest of the animal creation. The simplest form of symbolism is the spoken word. This is a pattern of sound which a speaker uses to express his state of mind to a hearer, who, through familiarity of mental association, is able to relive the mental experience of the speaker.

Written language produces this same reliving of mental experience, but at two stages removed instead of one. A special variety of written language is that of mathematical symbolism used by scientists. One source of misunderstanding between scientists and humanists in the modern world arises from the fact that they use in their studies these two different languages of literature and mathematics.

The complexity of modern mathematical symbolism makes it very difficult for the humanist to come even to an elementary understanding of modern scientific thought. For the scientist, the corresponding task is much easier, for he is familiar both with words and with the use of verbal logic. If the departmentalization of knowledge is to be broken down, a much greater effort of understanding is called for from humanists than from scientists. This is so, not merely because the language of science is difficult to learn, but also because for the scientist the warmth of the humane studies is a pleasant refreshment after the cold abstraction of his own. The study of formal logic has been likened to drinking champagne. In moderation its sparkle exhilarates, but in excess it befuddles and leads to a loss of sensitiveness.

One important distinction between the languages of the scientist and humanist must be made at the outset. The symbol of the scientist refers to a clearly defined reference. At any point in a logical discussion a particular symbol could be replaced, if desired, by the fact to which it refers. For example, π stands for the ratio of the circumference to the diameter of a circle and the equivalent is direct and unambiguous. This must be so, because the scientist wants to communicate his thought in such a way that another scientist anywhere in the world can reproduce exactly the experiments which form the origin of his thought and the means by which its conclusions can be verified.

In language, as used by humanists, the verbal symbols employed have no such simple unambiguous relationship to fact. Every word brings with it a thousand associations from the past, because of its long association with the creative minds of the human beings who have used it. Words have all kinds of shades and subtleties of meaning. They are almost alive because they express and respond to the creative quality of the human mind. Words, like human beings, have histories. At any instant in its long life, you might say that, as a symbol, a word has a definite meaning, in the sense that it refers to some part of experience which can be clearly defined. But to freeze this instant of a word's life would be to deprive the word of life itself, and to make language a poor tool as a vehicle for developing human thought.

Because words have this living individuality of their own, thoughts expressed in a national language can never be exactly expressed in another, for together with much else, words carry with them the subtle impress of national life.

> You English words? I know you;
> You are light as dreams, tough as oak,
> Precious as gold, as poppies and corn

wrote Edward Thomas.

SYMBOLS AND MEANING

The symbols of literature, unlike those of science, are not wholly external to their meanings. They are not like labels attached to their meanings. The scientific symbol for the perimeter of a circle may be p and this is not quite free of connexion with perimeter; but it could equally well be x. The symbols of the humanist, however, are never wholly external in this way. In the lines 'Gather ye rosebuds while ye may! . . . Then be not coy; go marry', the botanical metaphor is not adventitiously botanical. By it, the poet links together all the freshness, bloom, and charm of young womanhood and spring gardens, and so heightens his effect. This contrast between the vividness of literary symbols and the abstraction of scientific is well expressed by the two lines of Goethe:

> Grau, teurer Freund, ist alle Theorie,
> Und grün des Lebens goldner Baum.

Because of this, the symbols of literature stir up a thousand half-conscious associations and emotions within us, and when they do this, the very words used in literature seem to catch a hidden fire as though giving a reflection from another world—a spiritual world, the world of creative mind. When this use of symbols is made by a great artist, matter becomes momentarily lit up by the world of spirit streaming through it in creative activity. Then it brings with it its own conviction; a conviction as profound as the logic of scientific proof.

A WORLD LANGUAGE

Scientists form more of an international community than most other professional groups, because the very rigidity of scientific language makes it a successful means of communication between men whose verbal languages act as a barrier to the free flow of ideas. It seems likely therefore that no kind of secure world-order will be built up until a world-language has made it possible for a common body of political and philosophical thought to grow, and until language becomes the background of world-unity in action.

The rigidity of scientific language on the other hand is essential, because the scientist wants to express his experience in such a way that other people will be able to reproduce this experience in identically the same way, and it is this that has so greatly helped modern physics to be international in character, and hence greatly accelerated its pace of advance. But the humanist does not expect that the listener to his words will experience an exact reproduction of his own experience in producing them. The listener to a poem or a story must bring his own unique individuality into play, and the elastic nature of the verbal symbols employed makes this possible. For example, every fresh performance of a play of Shakespeare is virtually a re-creation of the play. The producer and the actors do not attempt to give a performance which will merely mirror Shakespeare's thoughts. The producer deliberately puts into it something of his own creative power. Each actor to some extent submerges his character in the character as described by Shakespeare, but to some extent also he adds to it a flavour of his own personality. This re-creative character of literature would only be possible in a symbolic medium with the ambiguity, but resilience, of words.

The difficulty about using words at all to express and communicate experience is that in any language there are a limited number of words, whilst experience is unlimited. Also experience is continuous but words are discontinuous. For example, although our sense impressions of colour vary infinitely from violet at one end of the spectrum to red at the other, we have a limited number of colour words, so they must to some extent overlap and have vague edges. Because experience is the experience of creative life, it is unlimited and also continuous. The purpose of words to convey this would be defeated if words were made to have sharp definite meanings such as have mathematical symbols. Language does have considerable elasticity, because out of a limited number of word-stems an almost unlimited number of permutations can be made. Also the emotional overtones carried by words soften their edges and make them more useful to convey experience.

SYMBOLISM AND CREATIVENESS

A mind which wishes to get into communication with another mind must use a symbolic language. There is a good deal of evidence that some people in special circumstances can communicate with each other without the interposition of physical symbols. The evidence appears to be convincing that telepathic communication can take place, but it is not a widespread or common method for the interchange of thought. If it were, how great would be the loss, for men would never have bothered to invent language and so we should not have known the arts of poetry, prose, drama, and rhetoric. In the recognition of this simple fact is implied the understanding of an important principle of artistic creation. This is the principle of selectivity. Verbal symbolism is the outcome of a selectivity imposed on man by the structure of the physical organs of speech. Our bodies, although sometimes a nuisance, are essential to creativeness. They force us to select and in the selection from an infinity of possibilities we create a work of art. In all creative work a very important creative factor is the selectivity imposed by the limitation of the medium through which creative mind expresses its experience. The unique quality of a work of art derives in part from the personality of the artist and in part from his selective use of the very limitations of his medium. For example, the difference between two houses designed by two architects may be due to the different personalities of the designers; but it may also be due to the fact that one is working in brick and the other in stone. Selection is essential to creation. 'This body of our death' may not be, as Sir Richard Dyer, the seventeenth-century poet thought it was, 'a clog to weight us down to earth'. It forces us to select in a thousand ways, and so to sharpen our personality. Having developed a personality, imperfect though it certainly will be, we are impelled to project this personality upon the matter that composes our external world until this too exhibits something of the quality of our inner life of thought. This is the creative life to which all human beings are called. When a person externalizes part of his inner life in this way, something new is created which did not exist before. The only entity capable of such creativeness is a personality and, when so creative, the personality may be said to be living at a spiritual level, and its work of artistic creation to transcend the limits of the natural world of space, time, and matter.

THEORIES OF SYMBOLISM

Symbolism plays such an important part in life and education that the effort of critical examination which A. N. Whitehead brings to the subject in his book *Symbolism: Its Meaning and Effect*, is well worthy of study. He starts from a formal definition of symbolism:

> the human mind is functioning symbolically when some components of its experience elicit consciousness, beliefs, emotions and usages, respecting other components of its experience. The former set of components are 'symbols' and the latter set constitute the 'meaning' of the symbols. . . . The transition from the symbol to the meaning will be called 'symbolic reference'.

Whitehead then goes on to describe two aspects of reality which are always present in symbolic thinking. There is first the familiar immediate presentation of the contemporary world in all its particularity and with its familiar quality of change. This mode of experience Whitehead defines as 'Presentational Immediacy'. The second mode he calls 'Causal Efficacy', and it is that mode of experience which concentrates on the universal and permanent, especially when this arises out of an awareness of the causal relationships between events.

> Human symbolism [he says] has its origin in the symbolic interplay between these two distinct modes of direct perception of the external world.
>
> Symbolic reference [he continues] leads to a transference of emotion, purposes and belief, which cannot be justified by an intellectual comparison of the direct information derived from the two schemes and their elements of intersection.
>
> Presentational immediacy is an experience that is handy, definite and easy to reproduce. Causal efficacy, however insistent, is vague, haunting and unmanageable. The former, for all its

decorative sense-experience, is barren. The latter is heavy with the contact of things gone by and the destiny which lies ahead.

The contrast between the comparative emptiness of Presentational Immediacy and the deep significance of Causal Efficacy, Whitehead believes, is the root of the pathos which haunts the world and which is present in all great literature. He gives a number of vivid examples of this. *Pereunt et imputantur* is an inscription on an old sundial in a monastery. A free translation of this would be 'The hours perish and are laid to account'. Here *Pereunt* refers to the world disclosed in immediate presentation, gay with a thousand tints, passing, and intrinsically meaningless. *Imputantur* refers to the world disclosed in its causal efficacy, where each event infects the ages to come, for good or for evil, with its own individuality. The same contrast he finds in the final stanza of Keats' 'Eve of St. Agnes', commencing with the haunting lines 'And they are gone; ay, ages long ago. Those lovers fled away into the storm'.

Because presentational immediacy and causal efficacy together give us an understanding of reality and because the symbol is the bridge between these two worlds, symbolism plays a critical role in civilized life. Symbolism, it is true, has a tendency to run wild, like the vegetation in a tropical forest, and so prunings or even revolutions of symbolism are necessary in all societies. But however you try to expel symbolism from social life, it always returns. When the State reduces its symbolic ceremonial to the barest simplicity, then private associations at once revive it in luxurious forms. This can be seen particularly in the simplicity of American public life and the extravagant symbolism of such societies as the Klu Klux Klan, or even of the Elks and other less violent societies.

THE SYMBOLISM OF POETRY

In poetry, the language of the humanist finds its most powerful and subtle medium for the communication of experience, and for the exercise of that creative imagination which reveals the spiritual world to man by the transfiguration of the material. In addition to all the other uses of language as an evocative, expressive, representative, and symbolic medium, the poet adds the artistic effect of the use of patterns of sound and so gets, as it were, another dimension into his medium. Shakespeare's poetry is full of lines that illustrate this dimension, but perhaps the best are four lines from *The Tempest*:

> Come unto these yellow sands,
> And then take hands:
> Curtsied when you have, and kiss'd,—
> The wild waves whist,—

These lines convey, mostly by their sound pattern, the sense of bright seashores, happy laughing children, the movement of people and sea, the sound of the waves, and a sense of strange wildness and mysteriousness that reaches far back and beyond the immediately bright picture.

Wordsworth, like Shakespeare, often had this experience of the immediate, vivid present side by side with the haunting sense of eternal truths dimly grasped. He expresses it in his experience of

> a sense sublime
> Of something far more deeply interfused,
> Whose dwelling is the light of setting suns,
> And the round ocean and the living air,
> And the blue sky, and in the mind of man.

LANGUAGE AND THOUGHT

Language is not only important as a means of communication but, as self-conscious beings, it is the way by which we talk to ourselves, i.e. the way by which we reason. Before a child can talk it can hardly be said to have come to the age of reason or to be able to think. Some thinking, and some very important thinking, is done in visual symbols, but the wide range of reasoned, intellectual thinking is done by means of words or sentences and their power to enable the mind to proceed from simple intuitively accepted truths to less obvious and sometimes surprising truths. Language is this essential tool of thought because it links together the visible, tangible world of sense with the invisible, supra-sensuous world of ideas. It also at the same time creates another bond. The sensuous world appears to us as a world of constant flux. Matter is in constant movement in time. But when we begin to think about the sensuous world we are obliged to do so in terms of abstractions and generalizations which are unchanging. Horses gallop, grow old and die; but the abstraction of class, which we call 'horse', or the adjective 'equine' are thoughts which do not change. The world of thought is largely a world of fixed and enduring ideas. Plato believed that these ideas and the whole conceptional world was in some way more real than the sensuous moving shadow-play of our perceptual experience.

Language is also one of the principal means by which the individual mind is able to free itself from the bondage of instinct. Instinctive ideas and feelings can flow up into the conscious mind from levels below consciousness. But language makes conscious, abstract thought much more powerful to control them. Everywhere else, except in Man, consciousness is dominated by instinct. Part of his struggle to be free is therefore achieved through language.

The individual mind is concerned both with contemplation and action. Thinking is a kind of symbolic activity, or a preparation for activity, as well as a profoundly reflective process. Conscious ideas can become unconscious, and this happens all the time as skills are learnt and social values accepted. These can be recalled to consciousness by language. In addition, thoughts sometimes expressed in language can flow up into consciousness from very deep levels of the unconscious mind. This clearly happens to creative artists and a poet like Coleridge has told us that the poem 'Kubla Khan' came to him in this way without conscious effort on his part.

We, who develop our powers of conscious thinking in symbolic terms, live at one remove from the hard, material world of everyday appearance. Language and the world of books can be a means of escape from life; yet if we ourselves, and the external world in which we believe, are somehow compounded of both matter and spirit, then symbols bring us closer to an understanding of both.

6

Number

MATHEMATICS AS A LANGUAGE

JUST as there is, at a certain age, what the experts call a 'reading readiness', to be used as the jumping-off point in the teaching of writing and reading, for interest to be canalized into skill; so also, as has already been mentioned in an earlier chapter, there is an age when a great interest in number is shown. This should be capitalized in the early teaching of arithmetic. It is then possible, if scientific methods of teaching arithmetic are used, to give a firm, never-to-be-forgotten basis for all later teaching of mathematics. But the methods used must be individual, for children vary so enormously in their capacity to advance in mathematics. They must also be logical, and take the child forward by slow logical steps, as is done for example in the excellent arithmetic books prepared as a result of research in the Winetka School of America. They must provide for continued complete success at every stage of advance, so that boys, and particularly girls, retain complete self-confidence in their powers to 'do' arithmetic. A high proportion of children think that they are bad at arithmetic. They are not bad—they have just lost confidence in their own natural number abilities, as a result of the kind of bad teaching which allows them to get most of their sums wrong.

Mathematics is a language like words, yet in Western Europe we have largely deprived our children of any knowledge of it but the most elementary, because it has come to be thought of as a specialist study for a few gifted children. Because it is pursued seriously by so few children in our secondary schools we suffer in our western societies an appalling shortage of scientists and technologists. If a child does not study science at school this is a loss which can be made good later at the university, provided he has studied mathematics, but not otherwise. The study of mathematics requires many years of disciplined, patient study and if this is not done during the years of school life, the loss is nearly always permanent. The present Professor of Physics and Head of the Cavendish Laboratory at Cambridge learnt his physics at the university and not before; but this was only possible because, at school, he had thoroughly acquired the knowledge of the language and skill of mathematics. The plea will be continually made in this book that mathematics, like literature, should be one of the basic studies for all children during the whole of their school careers and that, for example, admission to a university should rest on a high performance in the use of both languages.

The Greeks knew perfectly well how essential it was for the educated man to be both a mathematician and a scholar of 'letters', but curiously enough, in this most scientific of epochs, we have forgotten this truth.

The new worlds being revealed to us by astronomers, physicists, and chemists in the remoter parts of space or the inner recesses of the atom, must remain largely unknown to those who are blind because they do not possess the eyes to see, which mathematics could give to them. This means that a large part of the knowledge of the world around them or, if you like, God's handiwork, is hidden from them and their lives are the poorer. The mathematician, like the poet, immensely increases man's mental horizon by his creative gifts of representation and interpretation. Like poetry, mathematics deals with the material world of sense, but is a creation of the human mind. It can be defined as 'the study of patterns of ideas, executed by means of specialized techniques which are believed to be infallible'.

As a study which essentially links the practical and the abstract there are two approaches to it. Some children seem to be bad at mathematics because they really need the practical and empirical approach and are given the abstract and logical. They should come to mathematics from their realized need of it to measure the kites or boats they make, or to calculate the area of a tablecloth. Others enjoy the sheer imaginative delight of playing with numbers or symbols that have no necessary relevance to any practical situation at all. Both approaches should be used in teaching children, because both approaches are necessary in the use of mathematics in science and technology.

A clear example of this can be taken from the field of aerodynamics. Many problems relating to the flight of an aeroplane can be solved by dividing them into two groups; one group relates to the forces of 'lift' which raise an aeroplane up vertically from the earth; the other group relates to the forces of 'drag' which tend to stop the aeroplane from moving horizontally forward. In calculating 'lift' the theoretical physicist is needed who can quickly idealize his problems by inventing an ideal atmosphere free of internal friction. In calculating 'drag' the applied physicist is needed who can measure real velocities in a wind-tunnel and develop empirical formulae. Together, the theoretical and the applied physicist can solve almost every problem of flight; separately, they can solve only a few.

This kind of collaboration has been most effective in producing progress in physics. A theoretical physicist will idealize a problem so that it can be dealt with by pure mathematics. This ideal problem can be forced to yield a solution. This solution must then be compared with the results of experiments contrived by applied physicists who have been inspired by its form to invent new apparatus. Every branch of mathematics illustrates the same principle.

Euclidean geometry, for example, is concerned with mental concepts such as points, lines, surfaces, and figures which are not necessarily related to the real world at all. This does not bother the pure mathematician so long as his geometry has perfect internal consistency. There may be correspondences with the real world that he knows, but this is something to be explored by the applied mathematician. Euclidean geometry has many such correspondences, but it is one of the duller geometries. Riemann invented a very different geometry which seemed much more remote from real life. For example, one of his postulates was in direct contradiction to the evidence of our senses that the three angles of a triangle add up to two right angles. One result of this was to give a new meaning to infinite lines and surfaces; they became curves and continuous. The strange thing was that Riemann's geometry, which seemed to be based on ideas of space and time very different from those revealed by our investigation of these quantities on the surface of the earth, turned out to be more predictive of truth than Euclid's in astronomical or nuclear dimensions of space and time. This raises the question: How can the manipulation of symbols *we* have invented, according to rules which *we* have made up for ourselves, reveal later the nature of the physical world, particularly in distant and obscure parts of that universe? Unless the human mind is somehow part of the mind of the God that created the physical universe it is very hard to understand this revelatory character of human reasoning.

The two different approaches to truth made by the pure and the applied mathematician show how separate, and yet how complementary, are the subjective and the objective parts of the human mind. The theoretical physicist lives in an abstract world of thought in which he deals with frictionless pulleys, perfectly rigid beams, incompressible fluids, and so on. These perfect and timeless entities he represents by symbols so that their complexity does not elude him, and so that they can be manipulated with economy of thought.

The applied physicist on the other hand, works with real pulleys, elastic beams, and compressible fluids, but uses the mathematical patterns invented by his colleagues to recast a practical problem in a new form, or to clarify and extend the practical observations he is making in his laboratory.

The mathematical symbolism of the scientist does take him one step away from the immediate world of sense, but it does not necessarily take him away from reality, if, as I have argued, reality is both unique and related. The veil of symbolism need not be opaque. It may be transparent and the scientist may be able to see through it to the objects which are symbolized. Thought always needs language as a vehicle, but the thinker must bend language to his purpose, so that it loses its opacity. He must realize that the structure of relationships which science reveals is the structure of the sensual world, and the universal is only understood as exemplified in the particular; and equally, that the permanent is only understood as exemplified in the historical.

ABSTRACT THINKING

The special character of mathematical thought is its abstractness. To abstract is to consider separately things that are inseparable, or to consider as a related whole things that are discrete. So far, therefore, as mathematical thought is limited to formal logic and abstraction, so far the abstraction may falsify. This limitation must always be remembered. But if the formal logic of scientific thinking is linked at one end to the observable world of the unique and the historical, and at the other end to the intuitively known, internal, mental world of timeless pattern, this danger of falsification is reduced to a minimum. It is true that such a view is based on the assumption that reality includes both thinking minds and objects of thought. But if this basic philosophic axiom is accepted, then science affirms the reality of abstract thought and regards this as its main province.

The abstract thinking of science may be either deductive or inductive. In deductive thinking the scientist draws out the implications of a given abstract concept. Most mathematical thinking is of this kind. It is concerned primarily with structure and not with the components of structure. For example, in the series 1, 3, 5, 7, 9, 11, etc., the symbol 7 can be thought of either as a symbol which stands for seven books or in the more abstract sense of an element in a series or a structure of 'oddness' in numbers. A shopkeeper may think of 7 in relation to books, but a mathematician is much more likely to think of it in relation to the deductive processes of thought when applied to the concept of a series. Much of Greek science was of this kind; its limitations sprang from the fact that the divorce between the world of thought and the world of sensation was too great. As a result, experimental science declined and was only revived in the European renaissance.

SCIENTIFIC DETERMINISM

One of the results that follows from the abstractness of scientific thinking and the use of mathematical symbols is that it often leads to scientific determinism. The use of mathematics implies the reduction of what are unique individual facts to mere indistinguishable units, and the replacement of concrete history by abstract law. This leads to a determinism which is useful within the area of formal logic, but which must not be applied outside this area and is not necessarily true of the reality beyond it.

Materialism, like determinism, is another product of the abstraction of science. It is the assertion that behind the variety and change of the material world is a substratum of identical material units. It does not matter whether this substratum is thought of as electrons, or waves; in either case it is different from the variety and historicity of the world of sensation; it is a logical and conceptual product.

The old idea of a simple deterministic scheme of cause and effect no longer accords with the facts, and no longer enables us to predict accurately the future. When we ourselves think of cause we think of it ultimately as being a creative mind. The introduction of the observer and of uncertainty into the study of physics, has brought it appreciably nearer to those studies in which the quality of things is as important an idea as their quantity. Physical events are known only as regards their space-time structure. Their qualities are unknown. It is surely not an absurd thought to suppose that these qualities of objective knowledge bear a resemblance to the mental events which we know directly, and which form the raw material of our subjective knowledge.

Scientific thinkers should not be asked to surrender their materialistic or deterministic theories since these are essential to the formal and logical character of science. Equally it is true that materialism and determinism should not be applied to the real world. They apply only to the conceptual world. This was precisely the mistake made by the philosophers of the latter half of the nineteenth century. The formal logic of science had revealed so much new truth that they assumed there was an exact equivalence between it and the real world. It seemed to them that if materialism and determinism were an essential part of scientific reasoning, then they must also be part of reality. This was also the fundamental philosophical error made by Karl Marx. He applied scientific thinking to the real world of individuals and historical events. His dialectical materialism includes both errors; the error of materialism implied in the denial of the spiritual world of value, and the error of determinism implied in the doctrine of the inevitable dialectic of history.

The error of the Marxists arose from their attempt to link too rigidly the materialism and determinism of the conceptual world with the real world. In medieval science, on the contrary, most links with the real world had died and so had creative advance in science. The scientists of the renaissance therefore fought for the recognition of the real world as a world to be explored by observation and experiment. The history of science shows that either in an atmosphere of pure abstraction, or of the purely concrete, science does not advance. It is a language and it must speak of reality; part of reality is the historical and individual world of experiment, and the other part is the world of law and concept to be formulated by creative minds. Mathematical symbols enable these two worlds to be combined in a way that is useful even if not wholly understood by man's finite mind.

THE DEVELOPMENT OF MATHEMATICS

The historical development of the study of mathematics is an illustration of man's desire to relieve his mind of unnecessary labour on routine tasks, so that it is free to concentrate on increasingly difficult mental operations.

Arithmetic first developed by abstracting the idea of number—say, the number 5—from the particular groups of five fishes or five days. Then the idea of 5 as the sum of 3 and 2 was a further abstraction, until finally arithmetic became largely the study of abstract pattern.

Geometry, the great study of the Greeks, developed out of the abstract consideration of relationships between points, lines, and planes, but was used by them and all later engineers in their massive rock or marble construction. Much later, when it was realized that the world was round and men had begun to circumnavigate it, spherical geometry was essential to the development of the art of navigation.

Trigonometry is a further generalization from geometry since it combines the notation of geometry and algebra—that new mathematical language invented by the Indians and Arabs and developed by them into a potent instrument of the understanding of the scientific world.

If we owe arithmetic to the Babylonians, geometry to the Greeks, algebra to the Arabs, we owe to the English the invention of that most effective language of modern physics, the infinitesimal calculus. Until the invention of this new symbolism of the calculus the human mind could not really grapple with the problems of motion and change; of the infinitely large and the infinitely small; of periodic motions like those of the tides or of light-waves. This has been done by the description of our world of change in terms of a multiplicity of 'differential equations', as they are called.

In dealing with the facts observed by applied physicists, two different classes of differential equations have been invented—'ordinary' and 'partial' differentials.

'Ordinary' differential equations relate to an abstract world, which is assumed to consist of many discrete and unchanging particles, whose changes are followed against the single independent variable of time.

'Partial' differential equations are equations which represent the flow of heat, sound, electro-magnetism, etc., or some other variable, throughout infinite space at all times and at every point. These are equations of complete continuity, in which space and time are not rigidly separated and their form is generally that of a wave.

Nothing would seem so completely opposed as these two abstractions of the continuous wave in space-time and the discrete particle with a history in time. Yet in recent years we have realized that either both must be true, or that there is a third abstraction, which we have not yet found, which somehow includes both as partial truths. In all our work in the microscopic world of the atomic nucleus, or the astronomical world of the nebulæ, we need to use both types of equations together as though both were true. In our man-scale world of small velocities and moderate lengths something in our human scale of existence prevents us from seeing how the uniquely historical and the timeless pattern can both be parts of a whole, or to put it another way, how particles and waves can be united in a single picture of the material world. But we have reached the exciting point in the development of physical science when we realize that our human view of matter and time is not the final answer to its mystery.

The old view of the material universe as composed of hard particles of matter located in space and moving in time has ceased to be of any use in the progress of physical science and has had to be abandoned. The geometry of Riemann and Einstein have replaced it by the concept of 'events', which occur in 'space-time'. At the same time the latest development of the calculus at the hands of Dirac and Schrödinger show that finite particles also have an infinite wave-structure, and that infinite waves have a discrete particle character. This all looks very illogical to the mind that tries to picture it in terms of models, and it can only be grasped at all in terms of mathematical symbolism. But a study of this symbolism, even of a moderate degree, does open up to the mind a great new vision of the regularity and complexity of the material universe. All of this is denied to the mind ignorant of mathematics, and also the modern world cannot be understood without some knowledge of science. But science without mathematics is like the play of *Hamlet* without Ophelia, who, some would say, was like all mathematicians—charming and a little mad.

7

Science

THE BEGINNINGS OF SCIENCE

AS SOON as children are fairly proficient in reading and counting, they are full of curiosity about the world of nature, anxious to know how machines work, and why things happen as they do. Once their interest is engaged they will collect and tabulate facts without number. It is out of such curiosity and fact-finding that the disciplined study of science grows.

To observation and experiment, the teacher can add the facts derived from his own experiments, the knowledge of the work of painstaking or heroic scientists from the past, and so slowly the pupil can come to know something of the methods, discipline, and attitude of the scientist. In this, the understanding, through personal experience, of the value of scientific method, is of more far-reaching importance than the knowledge of scientific facts.

SCIENTIFIC METHOD

Since the great creative outburst of experimental science in the seventeenth century, scientific studies have been pursued by a method and with a discipline that has grown particularly effective and creative in this century.

The basis of scientific method is the inductive method of reasoning. Experiment and observation leads to the collection of facts which generally display some regularities or pattern that can be clearly set out. The scientist then develops an hypothesis or theory to explain the existence of the orderly relationships detected. A scientific hypothesis is used as the basis on which to predict new facts. New experiments are therefore devised to test these predictions or, sometimes, to be critical experiments in the choice between rival hypotheses. If an hypothesis is sustained by these new experiments it will be formulated in the form of a law.

For example, during the nineteenth century a Kinetic Theory of Gases was formulated to explain the relationship, discovered earlier by Boyle and Charles, between the pressure, volume, and temperature of fixed masses of gas. Boyle's and Charles' Laws were then assumed to be universally valid and, as such, used to predict the course of future experiments. To be able to predict the future is to place yourself in the position to control it; and so the development of a great body of scientific law has given men great power over the vast forces of nature; as some would say, power in excess of their wisdom. Happily, scientists themselves are generally humble men, because they are constantly finding that even the most clear cut laws are imperfect. Thus in the twentieth century Charles' and Boyle's Laws have been found not to apply at extremely low temperatures and so a new theory of gases has had to be developed.

SCIENCE AND IMAGINATION

Scientific advance has been due partly to the careful experiment and disciplined reasoning of scientists, but also (and this is sometimes forgotten) to the inspired imaginative and intuitive thinking of the really creative scientists. Einstein wrote: 'There is no logical way to the discovery of elementary laws. There is only the way of intuition; which is helped by the feeling of order behind the appearance.'

Great scientists have a capacity for inspired guessing and an intuitive ability of knowing what are the relevant and what the irrelevant facts. They set their minds consciously working on a problem, and then out of the subconscious mind flow ideas that illuminate the whole scene. It is the combination of laborious and reasoned thought with flashes of imaginative insight that has enabled science to proceed so fast. The scientist needs to analyse and to simplify if his mind is not to be submerged by the richness of the external world, yet he also needs to see things in their totality.

Once, before I knew of Rumer Godden as a modern novelist of distinction, I bought one of her books to while away the tedium of a railway journey. As I looked at the title page I found myself wondering if the author were a man or a woman. So I thought I would play a game with myself. I would open the book at random, read the first paragraph on the right-hand page and then come to a decision as to the sex of the author, which might be checked by a more leisurely study. I did this and at the end of my reading of some dozen or so lines was in no doubt at all that the author was a woman. I was alone in the carriage, and so strong was my impression of a feminine point of view that it was almost as if there were a woman in the carriage saying the things written in the book. Yet there was no obvious clue in the words I had read. When I had confirmed my instantaneous impression, I looked very closely at the paragraph I had read and was able to prove to myself by a careful study of its phrases and a process of inductive reasoning that my previous conviction was correct and could be reinforced by the slower process of reasoned thought.

This trivial incident has often illustrated for me the fact that there are two paths to truth; the path of reason and the path of intuition. If we follow the path of reason we follow coherent, logical chains of thought step by step to a conclusion. From simple, self-evident truths the mind is able to proceed by means of chains of implicating inference to other more complex and less evident truths. The intellect by its powers of analysis and synthesis is able from the confused totality of experience to pick out differences and to re-unite them into new totalities that are more intelligible.

If we follow the path of intuition we exercise that power of mental insight by which the mind appreciates at once and in its totality some aspect of the external world, because there is something in our own personality that is like it. H. Bergson may have blurred too much the essential distinction between subject and object, but he defined this aspect of mental activity usefully as 'that kind of intellectual sympathy by which one places oneself within an object in order to coincide with what is unique in it and consequently inexpressible'. Analysis, on the contrary, is the operation which reduces the object to elements already known, that is to elements common both to it and to other objects. Reasoning, therefore, cannot reveal the truth about objects or people where these possess a large element of uniqueness. 'Consider any man,' says Bergson, 'symbols and points of view, therefore, place one outside him; they give one only what he has in common with others, and not what belongs to him alone. But that which is properly himself, that which constitutes his essence, cannot be perceived from without, being internal by definition, nor be expressed by symbols, being incommensurable with everything else. Description, history, analysis leave us here in the relative. Coincidence with the person himself would alone give me the absolute.' (*Introduction to Metaphysics* by H. Bergson, 1912.)

In thinking, reason and intuition are usually combined; for the assumptions upon which deductive reasoning rests must be accepted as self-evident by intuition; and from the collection of data in inductive reasoning there must be an intuitive leap forward when a provisional hypothesis is formulated.

The external world is composed of a great many individual and particular objects, each one unique and each having its own particular life-history. These are the two most striking characteristics of the external world—its particularity and its historical character. It is an individual world and it is always in the process of 'becoming'. Now science used not to be concerned so much with the unique particle and particular event, as with relationships between particular objects (such as atoms and molecules) and the 'order' which is therein revealed. And science is the least historical of studies. It seeks to discover the laws of nature in the sense of discovering those principles of order which are as true today as they were at the dawn of civilization. The law of gravity, for example, is not thought of as historical in any way. The verification of a law of nature ought to be possible at any time by experiments that can be exactly reproduced at any point in history. In this sense, since it is concerned with relationships and with law, science is not concerned with the historical at all, but with timeless pattern.

Yet as soon as the scientist gets at one stage removed in his thinking from the particular and historical world revealed to him directly by his experiments, he enters the special field of scientific thinking; and this is the field of formal logic expressed in the language of mathematics; the language in which he states his eternal laws.

SCIENCE AFTER THE RENAISSANCE

The growth of empirical science after the Renaissance added inductive thinking to deductive and so greatly enriched the character of abstract thought that science was able to proceed by the rhythmic alternation of inductive and deductive thought. Although arising out of observation and experiment, inductive thinking is no less abstract than deductive, for it rests on the principle of the uniformity of nature. Many particular instances are collected together, and then some hypothesis is intuitively framed which links the particular instance into an ordered whole of a universal character. The particular contribution of the Renaissance scientist was his insistence that science is an abstraction from the concrete reality of history. It is a simplified account of facts which, because they are individual and historical, for ever elude the grasp of science. The facts are true and so also are the scientific simplifications of them into laws, because these describe true relationships between them.

What makes the present period in scientific development so exciting is the fact that the creative impulses given to science at the Renaissance appear now to be coming to an end, and a new creative impulse to be coming in from a different direction. The Renaissance scientist went to nature, observed her, experimented, collected his facts, and then, using deductive–inductive logic, developed his conceptual thought and expressed it in mathematical symbolism. Today the link with the real world is being made from the opposite direction. The implications of mathematical symbolism are developed by deductive logic but not, as previously, to produce further abstraction, but to produce as end products (in the form of solutions to equations) the individual and the concrete. The scientist, from his equations, is forced to the conclusion that he has discovered the existence of a new particle or a new type of particle behaviour (i.e. a new piece of history). So he goes to the real world and contrives experiments, which may possibly reveal this new individual and historical world to him. Then comes the revelation. He actually finds in the sensible world the facts which his equations tell are there, but of which he was previously completely ignorant.

Here then we see that a certain phase of scientific development has come full circle. The Renaissance scientists went back to nature, and as a result the logical and mathematical side of science received an immense impetus. Now from the extremity of mathematical abstraction we are being forced back to an examination of nature, in order to find there what our abstractions tell us must exist. The evidence for this is well known to all physicists and is particularly shown in the prediction of the existence of such particles as the neutron, the positron, and the meson and their subsequent observation in nature.

At the beginning of the century scientists considered that they were investigating an inanimate nature external to their minds and divisible into pieces of matter enduring in time. They made use of a few simple concepts like length, mass, force, and time, which they thought were properties of external nature. It had not occurred to them that, for example, their concept of force might be a mental construct, projected on to nature from their own muscular experiences. Or consider the case of measuring. If a scientist said that a stick had a length of a foot, what he really meant was that he had taken a standard object, namely a foot-rule, laid it alongside the stick, so that he was able to observe 'simultaneously' the coincidence at each end of both stick and rule, and found a perfect matching. But the scientist was often not aware that his account of his experience was an account of experience and not of an external nature. What he said was 'This stick has a length of one foot'. So scientists imagined they were examining nature when in fact they were examining an experience in which observer and observed were a part of a single system.

Only slowly in this century have they become aware of this, and at the same time of the very far-reaching philosophic consequences of this discovery.

As this naïve view of the natural world has changed, so also has the symbolism used by physicists. For many years physicists used a form of visual symbolism. Molecules were pictured as collections of billiard balls. Atoms were pictured as planetary systems and some scientists actually thought that their models were a kind of magnified picture of reality. But in time these models ceased to be so useful as a way of advance. Increasing use had to be made of mathematical symbolism for which there was no visual counterpart. And today mathematics has almost completely supplanted the visual model. Mathematical symbolism is better than models for two reasons. In the first place, it can make use of more aspects of perception than the visual, e.g. it can use symbols for Time which is not a visually perceived reality. Then, secondly, it includes the results of reasoning, which is a mental process. This new use of mathematics assumes that scientific operations are concerned with observed matter and an observing mind, in a way which makes a complete separation between matter and mind impossible, or in other words, that matter may possess 'mind-like' qualities, and equally that mind may possess 'matter-like' qualities.

Art and literature seem to be more concerned with human experience than science, but this is only a matter of degree. After the brilliant period of advance in science by the Greeks, there was little further creative advance for two thousand years. Then came a large and accelerating pace of advance. Greek science stagnated partly because its philosophers forgot that their task was to make sense of 'experience', and not to explain the material world. Then at the Renaissance, creative spirits like Galileo paid no attention to the material world, for example to the weight of a body, but thought out Laws of Motion which would rationalize experience. One of the signs that we are near another period of renaissance is the fact that today scientists are leaving their materialism and returning to the rationalization of experience. Scientists no longer take the world of material objects as a necessary starting point, but go back to the experiences that led to the conception of that world for practical purposes, and group the experiences in a new way. This new emphasis on 'experience' rather than 'matter' links science more closely to literature and art than has been the case for many years.

8

The Creative Arts

ART AND BEAUTY

ART is a term that might be used to describe much of scientific and literary experience, and although the artist, like the scientist and the writer, expresses his experience in symbolic form, yet his experience is essentially an aesthetic one. He strives to realize and express in visual form an experience of beauty. He is not primarily concerned with the usefulness of his expression nor with its truth. To ask whether unicorns exist is an irrelevant question to the heraldic artist. The question is whether a unicorn is beautiful or ugly. Whether there was ever a real woman who sat for the picture of the Mona Lisa and, if there was, whether that picture is a faithful likeness or not, are both questions that were irrelevant to the artist and should be irrelevant to us. The artist does not inform, or reason, he bodies forth experience.

Aesthetic experience is one of the most simple, direct, and earliest of experiences. Children find in works of the imagination and in the expression of their delight in life in pictorial form the very food of mental life. It is hardly necessary for teachers to do more than give children the space and materials for activity, and the products of a rich imagination pour from them like the gush of a river. The artistic seems to be the most primitive and the least sophisticated of all activities. It is not that child-art or primitive art is necessarily better than adult or civilized art. Technique improves art, but children and primitive people are natural artists, and their work can always be recognized by its fresh and simple beauty. To omit this aspect of experience from education would be to deprive the child of something that is as important to his growth as bread.

PATTERN

The artist who is striving to express his inner experience of beauty in outer form, manipulates some material medium in such a way as to give it a quality of pattern. The best short definition of pattern is that given by A. N. Whitehead as 'a unity of variety in which the subjective understanding of the whole heightens the feeling for the parts, and the feeling for the parts deepens the feeling for the whole'.

This definition indicates that aesthetic experience is both intellectual and emotional; indeed, it involves the whole mind.

Whitehead, in his definition, speaks first of the unity of a work of art. This is an essential quality of art, and this sense of wholeness is produced by balance, by rhythm, regularity, and by the total relationship together of the parts that make up the work. Such a unity may be produced by the very simplest devices. Roger Fry in his book *Vision and Design* shows how the mere setting of a street scene in a frame may give it unity. He describes the convex mirrors which some people arrange near or outside their windows, so that they can look into the street without appearing to be merely curious about the doings of their neighbours. If you look at a street scene in such a mirror, it often takes on the character of a work of art, for two reasons; first, the scene has a frame, and secondly, you can detach yourself from the scene and so put yourself in a position to perceive its pattern, if it should have any.

The provision of a boundary is one element of pattern, and so is the inclusion of repetitive elements in the whole. Children love the repetition in fairy stories such as *The Three Bears*, and child and primitive art may be recognized by the strength of the repetitive principle. W. H. Auden has given his own poetic definition of pattern in the lines:

> What pedagogic patience taught preoccupied and savage elements
> To dance a segregated charm.
> Who showed the whirlwind how to be an arm
> And garnered from the wilderness of space,
> The sensual properties of one dear face.

This 'segregated charm', this repetition and wholeness of a work of art must help to produce the kind of emotion we have when we feel secure. We have a feeling of security when the element of the unexpected in the future is not too high. In an altogether incalculable universe we should become neurotics, for, unless the future is fairly reliable, we do not know how to act and are left in an agony of indecision. Repetition gives this sense of the coming of the expected and so produces a feeling of security and well-being.

The element of repetition, of balance, of harmony, and of the expected is always strong in art during periods of social stability when the prevailing style is harmonious and classical.

SPONTANEITY

In addition to pattern, art must have in it the element of spontaneity which adds to the expectedness of the pattern such an element of the unexpected, as gives by surprise a delightful feeling of novelty. For example, the two halves of a well-balanced design are rarely quite the same; or the sound pattern in a symphony may be repeated but often upside-down or in a different key; or the design of a modern block of flats, with strong repetitive areas of light and shadow, may be saved from monotony by the decorative and almost amusing addition of the lines of a series of balconies. Pattern and spontaneity are, in fact, the two essential qualities of a work of art.

Many humorous stories fall into the categories of works of art, because they contain these elements of pattern and spontaneity. In the early part of such a story repetition is used to produce monotony, and then right at the end some unexpected conclusion adds the element of spontaneity. A good example of this is a story which used to be current in one of the southern states of the U.S.A., where the railway tracks crossing a road are protected by gates, but where to make doubly sure a negro is posted in a kind of sentry-box to wave a lantern at night for the warning of motorists. The negro assigned to this simple task is often elderly, southern nights are often sultry, and it occasionally happens that these officials take a nap at their posts. Such a thing may have happened when a car crashed into the gates and the negro concerned was charged with manslaughter and brought before the Court. The prosecuting counsel put it to him that he had fallen asleep and failed to wave his lantern to warn an approaching car. But no: he affirmed with vigour that he was wide awake and had waved his lantern, and no pressure could make him alter his story. This so convinced the jury that he was in the end acquitted. After the verdict his defending counsel congratulated him on the way in which he had not wavered in his testimony that he was awake and had waved his lantern. 'Yes, sir,' said the negro, 'but I was mortal feared he was going to ask me if ma lantern was lit.' Humour is a by no means to be despised element in the spiritual life. It rests on and increases a confidence in life that is often of great value when conditions become dangerous or unhappy.

In all good art there is a balanced interplay between the elements of pattern and of spontaneity. Classical movements in art represent the desire to produce perfectly harmonious works; then it may happen that the element of pattern in art becomes ossified, and a new burst of spontaneity is needed to break it up so that the creative artist can again strive after perfection. Great artists owe much to the past, but each adds an original contribution, and so, in the interplay of pattern and spontaneity, art itself has life and movement. For example, Titian saw landscape as a distant prospect half veiled by feathery trees and contrasted with human figures in the foreground. Corot followed the same pattern, but his trees became more feathery and his figures were those of nymphs. Turner still liked the distant prospect, but flooded it with colour and light. Rembrandt, by contrast, loved shadows and only used light to reveal the quality of shade. Then Monet broke right away from this tradition and painted landscapes as shadowless colour-patterns. Manet simplified the new movement and gave to his pictures a unity that lent them repose. These two painters were followed by copyists who produced insipid imitations until Cézanne, still using colour-pattern, added a quite new quality to it by his use of depth and space-arrangement. Then Picasso came to give this depth and pattern a geometrical character that was developed still further by later artists. So even in the history of art there is an interplay between pattern and spontaneity.

BEAUTY AND UTILITY

There is no clear line of demarcation between objects made for use and objects made for beauty. A useful object is one that contributes to mere survival; a beautiful object is one that makes survival of value. Utility is more closely related to activity, and beauty to contemplation, but even here the distinction is not absolute, for life is a mixture of activity and contemplation and the two experiences are not mutually exclusive. Even music, which has a minimum of utility, unless it be to soothe the savage breast, is an active pursuit for those who perform it and a matter of pure contemplation for those who listen. The carpenter, engaged in making a chair, instead of going on with work as fast as possible so as to produce an object of mere utility, may pause in his work to contemplate the beauty of his wood, or to allow his imagination to improve on the minimal utility shape, and something of the quality of his own experience flows into the design of the chair. Such a chair, when finished, is always more than just a signal to a potential sitter. Every man who sees it, unless he is at the point of exhaustion, will pause before sitting to enjoy its graceful lines or patterned decoration. It is this element of craftsmanship in work which lifts life above the animal level of survival. The effect of the coming of machinery has been partly to speed up life, so that neither the makers nor the users of chairs have the time to enjoy either the making or the using of them. As a result workers who are just machine-minders find no joy in their work, so they are only happy when away from it. Unfortunately, the effect of working without joy is to produce the desire to find leisure employment, not in artistic pursuits which refresh and exhilarate, but in feverish mechanical amusements which drug the mind and make it able to endure joyless toil. This sorry state of affairs is not helped by the fact that at first machines are designed to produce poor imitations of hand-made products. But machine-made products need not necessarily be ugly. What the machine does is to stand between the craftsman and his material. It forces back the source of design from the hand to the head. This means that design in an age of machinery should be intellectual rather than sensuous, and there are many indications that this is in fact happening in modern industrial design.

At times of rich aesthetic creativeness you get not only a large number of great artists whose names and works endure far beyond their own times; you get also a rich folk culture that is largely anonymous, and the work not of professional artists but of humble workers, such as farmers and fishermen. Folk music and folk dancing are only two examples of this type of folk art. The great individual artists, however, find their creative capacities nourished by the folk art that surrounds them. When folk art is weak the individualists in art, however full of creative fire, find that they are separated from the life and work of the majority of their fellows, and form an esoteric group that produces escapist art. This has unfortunately been the fate of many artists since the powerful forces of the industrial revolution killed folk art, but there are many signs today that folk art is reviving and professional artists are coming out of the studio into the market-place.

DISCIPLINE IN ART

The life of art is not a simple receptiveness to beauty and its facile expression; it is a life of discipline and struggle. Art is coherent and its coherence is achieved by deliberate effort. Dancing, for example, is both more disciplined and more spontaneous than walking. Few careers are so arduous as that of the ballet-dancer, yet at the same time the ballet, although the most artificial of the dance-forms, can also be a powerful means of expressing spontaneous, new, and exciting ideas. The disciplinary element in art involves the artist in the arduous task of selection. Every work of art is the result of a multitude of decisions of selection. This work of selection forces the artists to live, in his moments of creativeness, in a private world. His consciousness is then composed simply of his awareness of the work of art which he is creating, and the real world recedes. The artist is self-absorbed yet he is not lonely, for he has lost the sense of his self in its unity with his creative work.

Because the language of art includes these two elements of pattern and spontaneity, it is more than an activity of the imagination; it somehow reveals the ultimate nature of reality. This is what Keats meant when he said that beauty was truth and truth beauty. Great art says something; it has meaning. But if you try to go further than this and either to assert or to analyse its meaning, you fail. To say that a work of art should have meaning is not to say that its meaning should be rational. Beauty does not belong to the world of logic. The artist chooses to paint a picture in a particular way, not in order to express meaning but beauty. His choice is what it is, merely because it is his choice. The child loving his game, the lover's unreasoning choice of his sweetheart, and the mountaineer studying his climb, are all living in the same useless but meaningful spirit as the artist. The artist may not know what is the purpose of his labour, but he knows that his pains are like the pains of childbirth. Wherever human activity is irradiated by the spirit of play, wherever beauty struggles for expression, life is being lived as it was intended to be lived, as a means of eternal creative newness and perpetual adventure.

ART AND VALUE

The freedom of art is a capricious and absolute freedom, and this is something which is different from ethical freedom. The painter is quite free to paint what and how he likes. The citizen is not free to act as he likes. This distinction between freedom and ethical freedom illustrates a valid distinction which may be drawn between aesthetic experience and other types of experience.

There is a similar distinction to be drawn between art and religious art, or music and religious music. Art is either beautiful or ugly, but religious art cannot be polarized so simply; it is good if it leads to the knowledge of God or bad if it hinders it. The Salvation Army regrets sometimes that the Devil has all the 'good' tunes, but it could happen that a 'bad' tune aesthetically nevertheless promoted religious feeling. The criterion applied is simply a different one.

The world of play and the experience of beauty is not a world or an experience that by itself can bring man complete or lasting happiness. The reasons for this are two; one is inherent in the nature of art and the other in the nature of the actual world. It might be thought that we should be completely happy if every contact with the material world were like a contact with music, and every contact with persons like the experience of being in love. But the fact that a happy life involves a balance of the creative and contemplative elements of experience prevents this, since the struggle to impose pattern on the unpatterned involves necessarily the contemplation of the disorderly, the ugly, the dull, and the insignificant. Equally the struggle to release spontaneity, the other element in the creative life, involves a constant battle with those individuals and institutions which destroy it: the slave-owners, the exploiters, the tyrants, and the apathetic.

Beyond the world of art are other worlds; the world of science or explicit truth, the world of morality, and the world of worship. It is true that all good art refers to eternal truths which lie beyond the fleeting shows of Time, but it is not in the nature of art to make this truth explicit. The truth revealed by art is known, but cannot be described in set logical terms. Art does not assert or inform, yet truth in its fullness is a matter of assertion and demands for its full knowledge logical as well as aesthetic form.

How unsatisfying the narrowly aesthetic life can become, may be seen by a study of the aesthetic movement of the nineteenth century when a coterie of artists, finding nineteenth-century religion heavy, its morality repressive, and the practical problems produced by the scientific advances of the century baffling, fled into aesthetic experience as an escape from a full life.

An eloquent prophet of this aesthetic movement was Walter Pater, and he has described its character in these moving words:

> Every moment some form grows perfect in hand or face; some tone on the hills or the sea is choicer than the rest; some mood of passion or insight or intellectual excitement is irresistibly real and attractive to us—for the moment only. Not the fruit of experience but experience itself is the end. A counted number of pulses only is given to us of a varied, dramatic life. How may we see in them all that is to be seen in them by the finest senses? How shall we pass most swiftly from point to point, and be present always at the focus where the greatest number of vital forces unite in their purest energy? To burn always with this hard, gemlike flame, to maintain this ecstasy, is success in life. . . . While all melts under our feet, we may well grasp at any exquisite passion, or any contribution to knowledge that seems by a lifted horizon to set the spirit free for a moment, or any stirring of the senses, strange dyes, strange colours and curious odours, or work of the artist's hands, or the face of one's friend. Not to discriminate every moment some passionate attitude in those about us, and in the very brilliancy of their gifts some tragic dividing of forces in their ways, is, on this short day of frost and sun, to sleep before evening.

In the development of this sensitiveness, the nineteenth-century aesthetes turned away from the practical affairs of life for two reasons: first, because when the mind is concerned with action it is not so open to impressions of beauty; and secondly, because industrial Victorian England offered as little scope to lovers of beauty as any view well could. How great is the contrast between the seventeenth and the nineteenth centuries! The Elizabethan regarded himself as a lover of beauty *and* a man of action; the Victorian was too often either a man of utilitarian outlook contemptuous of the triviality of art, or an aesthete who felt impelled to turn his back on the world of action and the responsibilities of social life.

Some of Pater's followers followed his philosophy to its logical conclusion. They were morally irresponsible, so contemplation became doing nothing in particular, and a love of beauty degenerated into a taste for bric-a-brac and the wearing of loose garments. Not all followed this path, and the movement produced the witty essays of Beerbohm and plays of Wilde, the dreamy poems of Yeats, and beautiful prose of Virginia Woolf. But some of these writers had already begun to realize that great art is to be enjoyed not only because it is enjoyable, but also because it is a revelation of the meaning of life. Such writers have then brought art to the limit at which it touches religion.

If you say that all works of art should have a meaning, it does not follow that the artist should himself know how to express this in scientific or theological terms, but it does mean that he must sincerely express his own experience. His work must be genuine and not imitative. He must be true to the artistic daemon which drives him to artistic expression. You can see from the biography of the Swedish dramatist Strindberg that there were times when he would have preferred to escape from the artistic responsibility which his creative gifts forced upon him. He lived a tortured life because he was so faithful to his daemon. Often artists are thought of as irresponsible people, but this may only be because they are faithful to the creative spontaneity of their artistic destiny. The responsibility from which they cannot escape is the responsibility of selection. But selection means decision and struggle. In the painting of a picture the mind must be constantly creative, deciding to include this or reject that, to order the pattern of the picture in this way rather than that, to include this or the other new and surprising feature, so that the picture becomes illuminated by the intentions of a creative mind. When this happens, we who look at the picture say that it has meaning, for we have seen something of the intentions of the creative mind that created it.

A photograph is a frozen cross-section of the living world, and this gives it the impression of being dead because it has about it the barrenness of presentational immediacy. Living, moving people caught by the camera appear to be set in rigid distorted attitudes. The unreality of a photograph springs from the fact that it is a two-dimensional selection from reality, but the selection is not the selection of a creative mind. It is the selection of a machine. The portrait painter, on the contrary, looks at his model and by the continued selections of his creative mind expresses in his painting the experience of value which comes to him in his effort to understand his sitter. It is not the present, the frozen cross-section, that is real, but past, present, and future known and expressed by creative mind in art that is real.

'Meaning' has been defined as the quality which something possesses, because it reveals the intentions of a creative mind in its pursuit of value. All art that has meaning therefore is related to the artist's sense of values. These can never be values that belong to the artist and the artist alone. A condition of communicability in art is the reference to, and acknowledgement of, common values. If I say, 'This paper is white', I am reasonably certain that I am communicating part of my own experience unchanged. But if I say 'That man is brave', I believe others will only understand me if we both acknowledge certain common values. Art that has meaning cannot, therefore, be divorced from the values on which society rests and which derive from religious belief. The examination of the significance of art in this wider sense must lead us on to look at the social studies and especially at history.

9

The Social Studies

SOCIAL STUDIES IN THE SCHOOL

THE preparation of the child for adult life as a member of society is mainly done in the school by the experience of social living in a community. But there are three subjects of the school curriculum that can contribute to an intellectual and even an emotional understanding of the meaning of such concepts as citizenship, patriotism, or internationalism.

The first of these subjects is that of geography, provided it is not studied as an encyclopaedic collection of geographical facts and data. Local geography can be the starting-point of a great deal of realistic geographic exploration. Visits and field work can extend this knowledge until it covers the whole of the country of a child's birth. Particularly if geographical study gives emphasis to a study of men and women, their work and play, and the use they make of the natural resources of their country, it can begin to give that pride in membership of a country which is the basis of patriotism. But for this to happen the emphasis must be upon human geography. Books of travel, exploration, and adventure can then carry the child in imagination to lands beyond its own, and introduce the child to those studies of the work of international agencies which in our generation bring help to undeveloped regions. All of this helps to build up a sense of world citizenship. Books such as J. Hemming's *Mankind Against the Killers*, with its vivid description of the work of the World Health Organization, is written for schools and it teaches incidentally, and in a most gripping way, more world geography than many a dull textbook on the subject.

The second subject that introduces the child to an understanding of social life is history and in the past it might have done more to this end if the kind of history taught in schools had not been of such an adult type that it did little more than crowd the memory, whilst starving the mind and imagination. The marital excesses of a Henry VIII or the political intrigues of a Machiavelli are not really suitable subjects for school history. Sir Richard Livingstone, the Vice-Chancellor of Oxford University, has done a great service to education by his constant pleas to teachers to regard the major part of military, political, and social history as an adult study to be pursued after the individual has had some personal experience of political, military, or family life. There is however historical material that is of the right kind to occupy the time and interest of school children. Local history, like local geography, can be real and exciting. The history of things and occupations—of clothing, food, homes, printing, art, sailing, or a dozen other such well understood matters, can give a real feeling of the spirit of an age and of historical change. The biographical histories of pioneers, saints, travellers, scientists, poets, and others can develop social idealism. I well remember how the heroic life-story of Kristen Kold, one of the founders of the Danish Folk High Schools, read at school, warmed my own mind and influenced my outlook for many years. In the later years of work in the secondary school there can be an introduction to the kind of social, political, economic, and military history which is really an adult study, but may be suitable for those whose bent of mind will take them later on into the specialist study of history. For those who are less historically-minded, the way into this type of history will be more appropriately through the study of current events; perhaps by the giving of an historical background to the week's events as put before the public by a newspaper of repute.

The third subject which can rightly be bracketed with history and geography as a social study is religious knowledge, since this is generally and rightly taught with an historical bias. It may be better, in fact, if religious 'knowledge', as distinct from religious 'doctrine', is taught as part of history itself. If the history of the Christian religion, for example, is taught out of relationship to secular history, not only will secular history be emasculated and false, but children will come to think that there are two standards of truth to be applied to historical trends, a secular one which is critical and agnostic and a religious one which is credulous and uncritical.

A school in a Christian country would be failing in its duty if it omitted to pass on to the rising generation the marvellous and splendid story of the heroic development of religious thought during the long struggle of the Jewish people; to tell them of the coming of Jesus of Nazareth as a 'light to lighten the Gentiles'; of His death, resurrection, and the astonishing victory of a few ignorant fishermen, the founders of the Apostolic Church, over the mighty Roman Empire; of the defeat and conversion of the European barbarian hordes; of the appearance of the Monasteries, the Cathedrals, and the Christian Universities of Europe; and of the spread of Christianity as a missionary religion all over the world. Finally they should be given the picture today of an atheist East, a nominally Christian West, and the two great uncommitted Continents of India and Africa.

THE HISTORICAL DIMENSION

History is much more than the mere record of unique events now past and the lives of unique individuals now dead. It is also a study of human relationships and social patterns. Some historical writing is heavy and lifeless because of the weight of social, political, or military structures within which living events seem to be entombed. Equally, some historical writing seems shallow and meaningless because people walk like ghosts in galleries of time that do not run on into the living present. There is truth both in the idea of a remorseless dialectic of history and also in the explosive powers of the free individual. The nature of each present instant as it passes is the outcome of the impact of the conservative forces of past history upon all the creative possibilities of many free individuals, and these instants as they pass make what we call history.

Children need to be introduced to this dimension of the historical as soon as they begin to be interested in matters that go beyond the affairs of the day and hour. Every subject of study has this historical dimension, whether it is art or science, and it does not matter greatly whether it is dealt with as art or as history. What is important is that by the time adult life is reached, the philosophical truths implicit in the idea of historical development should have been grasped.

A PHILOSOPHY OF HISTORY

If we could detach our minds from our bodies, we might see that two things which seem immensely real to us, that is the present instant and our experience of the historical, are in reality only different aspects of our experience of existing. There are very rare occasions in the lives of most of us when we have a brief experience of existing beyond time, but W. James' *Varieties of Religious Experience* shows that in the lives of the mystics this experience is more than fleeting and indeed becomes for them an abiding certainty. They are all aware of, and express their certainty of, an experience in which the historical is caught up into a truer and larger reality of timelessness.

The study of history and reflection upon the meaning of history will not make anybody a mystic, but it may help us to a better understanding of the relationship between time and the timeless. The Greek philosophers have not helped us greatly here, because although Plato, for example, was very greatly interested in the relationship between Time and the Timeless, he did not develop any carefully formulated philosophy of history. The Greek poets wrote with an unformulated philosophy of history and their poems and plays present this in the form of an interplay between the purposes of the Mortals and the Immortals. Thomas Hardy's mind was far from free of this primitive and tragic view of history. In *Tess of the D'Urbervilles*, he writes of the death of his heroine:

> 'Justice' was done, and the President of the Immortals (in Aeschylean phrase) had ended his sport with Tess. And the D'Urberville knights and dames slept on in their tombs unknowing.

HISTORY AND THE MESSIANIC HOPE

It is not with the Greeks, but from the people of Israel that a philosophy of history takes its birth. The Jews viewed history as a revelation of the purpose of God. The purpose of God was thought of as itself outside history, but capable of being grasped by the prophetic mind. The most sceptical reader of the Old Testament must be astonished at the degree to which the

Hebrew prophets were able to foresee the future. A great knowledge of the past and a humble and completely honest study of the nature and purpose of God led them to a foresight in historical matters which impressed their contemporaries, as it impresses us, as being almost miraculous. This did not prevent their contemporaries from stoning and rejecting them when the prophecy was unpleasant, but neither did such treatment nor the threat of unpleasant death divert the prophets from the certitude of their vision.

This uncanny gift of seeing into the future, possessed to a remarkable degree by the Hebrew prophets, cannot, I think, be divorced from the Messianism that was an integral part of the Hebrew historical philosophy and is also an inherent part of Christian philosophy, since the Messianism of Hebrew thought reaches realization in the Christian revelation.

Although the Messianic aspect of the Christian revelation is not today as much stressed as it was in the first centuries A.D. it has a vital bearing on any philosophy of history. For how is it possible to understand the meaning of history without knowing what the last stage of history will be like? This is realized as soon as the idea of progress is examined in relation to historical development. The idea of progress, which so strongly influenced the thinking of the nineteenth century, was itself an attempt to give meaning to history in quasi-messianic terms, for it can be regarded as the attempt to give meaning to history in terms of a movement towards a Kingdom of God on earth.

But the doctrine of human progress is unsatisfactory for many reasons. It is clear that this planet, revolving round a cooling sun, is not intended to be the eternal home of man as a creature drawing ever nearer to the perfect society. There is also a more fundamental objection to the doctrine of progress. It is a doctrine that makes every human generation and every human being a means to serve the interests of the following generation. This turns human beings into means and inevitably leads to the degeneration of personality and to a kind of society in which people are treated as means and not as ends. In this philosophy the desirable lies in the future; it cannot be grasped now. In it, too, the Kingdom of God is not within, it is without, in a far-off future, to be entered into by those happy ones who live in a time to come, but not for all those struggling, suffering generations of the dead. This is a tragic view of history, bleak and unacceptable, particularly to the Christian.

The messianic view of history is different from this philosophy of gradualism. It is catastrophic. It assumes that history will come to an end, just as it has a beginning. It assumes that when history ends, Time will end, and the generations of the dead live again in a life beyond Time, in the realm of the Timeless. From this view of the nature of the end, meaning shines back into the nature of the movement towards the end.

GOOD AND EVIL

Although the messianic view of history interprets the present in the light of the future, and assumes that at the last the Kingdom of God will be established, it does not imply an optimistic view of history. History is the arena in which good fights evil; in which good accumulates, leading to harmony and happiness; but evil grows also, leading to confusion and misery. The freedom of man and the force of his creative spirit in the world may lead to sudden creative movements, as individuals and groups allow their own creative energy to emerge and change the world; but if men allow their creative gifts to die they fall into one form or another of slavery, and this engulfs both free men and free institutions in darkness and misery.

Freedom imposes upon man the burden of decision and the pangs of creative effort. To avoid this many will accept slavery, and so in history you see not only the conflict between accumulated good and evil, but also the conflict between the spiritual impulses towards freedom and the material dragback to slavery. Man is essentially free and expresses his freedom in creation through the materialization of values that he recognizes as eternal. But freedom means heroic struggle and the acceptance of tragedy. Nikolai Berdyaev, the Russian philosopher, in his book *Slavery and Freedom*, examines the many different ways in which their disposition to slavery may lead men into sterile or destructive paths. The pursuit of pleasure; the acceptance of determinate beliefs in luck or fate; an over-compliance with society; the worship of the State; the domination of the family or tribe; the subjection to machinery; these and other enslaving movements and beliefs are shown historically to lead towards negation and chaos.

History can be seen as the conflict of good and evil or as the conflict of freedom and slavery; it can also be seen as the conflict of tradition and newness. Nothing is perhaps so striking as the vitality of ideas expressed in traditional forms which endure through the centuries. In England a surprising proportion of our laws, our language, and our ceremonials are the continuation of laws, language, and ceremonials that were invented in Norman times a thousand years ago. Yet equally striking is the fact of rapid historical change. How differently we dress, speak, and eat from the Elizabethans. How quickly newness changes the surface of life; how long the traditional lives on under its surface. In his natural freedom man embarks continually on one adventure of novelty after another; yet always history holds him and he is never able quite to escape from the grip of the past. The parable of the Salt and the Leaven is a parable which urges man to accept both his traditional and creative roles; he should be like salt, to preserve all that is good from the past, and like leaven to ferment the dull dough of events with the effervescence of creative life.

HISTORY AND REALITY

The nature of our historical thinking depends on assumptions we make about the relation of reality to the Time process. There are three possible views, and out of these will grow our attitude towards social change. The first view is that reality is wholly transcendent. We may agree with Plato that truth is to be found only beyond the flux of space and time; and that history only faintly mirrors reality and is ultimately without significance.

The second view is that reality is wholly immanent. This view of history is taken by the philosophers Croce and Collingwood. In Croce's words: 'Reality is history and is only historically known'. This view liberates us from the transcendental at the price of extinguishing all standards of value external to the sequence of historical change. Values are all one with the process. The Marxian view that there are no criteria except the accomplishment of the social revolution is nothing but the inevitable consequence of denying all reality external to the historical process.

The third view is that reality is both transcendent and immanent. In this view, history is to be taken seriously as a true revelation of reality. But at the same time there are universal values by which history can be judged. The earliest clear appearance of this view is in the Old Testament. For the Hebrews, God was ever active in history, and, for the prophet, God spoke in and through the turmoil of social and political events. This view is still recognizable in Hegel's doctrine of the Spirit struggling into being through history. But Hegel's view parts company from the Hebrew–Christian tradition when it gives intrinsic stature to man as an expression of the divine, and does away with any need for redemption.

Marx inverted Hegelianism, so that, instead of history being the expression of the Idea, the Idea became the product of the historical process. By denying reality to anything outside the historical process itself, Marxism is relativistic and allows no values external to the process.

No attempt to evaluate contemporary thinking about history and society can afford to ignore the importance of Marxism. Marxism has grasped the reality of history, and in this it is in the true Hebrew tradition. Marxism is right in believing that history is a medium of revelation and that thought is itself part of history. But it is equally important to appreciate the central error of Marxism which, while affirming the historical aspect of events and experience, denies their universal aspect.

This issue can perhaps be best illustrated from the field of art. Any work of art can be understood in its historical development. It is important, for example, to see the reaction in painting away from literal representation towards abstraction and symbolism in connexion with the development of photography, or to appreciate the effects of psychological knowledge upon the novel. Nevertheless a work of art can never be reduced to purely historical terms, for in that case it ceases to be art. A work of art has a universal quality which transcends the process of historical development and in which the real significance of art consists. We cannot dispose of a work of art by displaying its historical connexions. There may be edification in the sociological interpretation of Shakespeare's plays (on which Marxists insist), but if *Antony and Cleopatra* is seen only as a struggle between individual anarchy and the orderly power of the state, how little of Shakespeare is caught and how much is lost. The ultimate value and meaning of drama is the value and meaning of persons and not of processes.

What is true of a work of art is true of all human experience; if a Beethoven symphony transcends time and space, so in one sense does every thought, feeling, and action. Everything is historically conditioned and there is no escaping the agony of history, but the full meaning of everything is also to be found in its transcendence of history.

The root error of Marxism is that it denies all value and reality transcending the historical process and admits no reality and no values except those of the process itself. The eternal conflict in the nature of man (arising from his refusal to accept the conditions of his creatureliness) is thus projected into the historical process and appears as the class struggle. This is a half-truth. Man does continually project his conflicts into history, but he can never identify himself with, or be wholly absorbed in, history.

Two results follow from the Marxian identification of man with history. It is assumed that man's eternal problems can be solved by reaching the right stage of historical development. Now the evolution of a fresh phase may be the historically inevitable result of the failure of the preceding phase. In this sense the social revolution and the dictatorship of the proletariat may well be the inevitable result of the failure of capitalism. But it does not follow that the dictatorship of the proletariat will inaugurate the perfect society. In other words the redemption of a social order is an entirely different thing from the supersession of one stage of development by another. The supersession of one phase by another merely changes the idiom in which man's eternal problems present themselves: *plus ça change, plus c'est la même chose.*

The second result of the Marxist hypothesis is the denial of all moral values and ultimately all value to human personality. There is nothing remarkable about the non-morality of Marxism; it is simply the inevitable result of denying all reality outside the historical dimension. If we assume that the development process is everything, there can be no criterion except the fulfilment of the process itself, since there is nothing by which the process can be judged. There can be no ethics but the ethics of expediency. Persons will be subordinated to process, since rights belong, not to human beings as such, but to the proletariat or the Party and the liquidated have no rights against the Party.

It is significant that three influential writers in this century who have developed philosophies of history—Nikolai Berdyaev, Herbert Butterfield, and Arnold Toynbee—are all Christian thinkers, who have reacted sharply against Marxist ideology.

Herbert Butterfield sets out to rescue historical studies from the contemplation of what he calls 'bleak diagrams of developing structures'. He is at pains to point out that historical events cannot be explained in non-human terms; they grow out of personalities and move towards personalities. They are alive with the wild, prodigal, complicated stories of individual action. They are best interpreted by those historians who can understand sympathetically the hopes and fears, passions and frustrations of individual men. Carlyle, for example, was able to shed a special light on some periods of history because his own character enabled him to understand the characters of some of his heroes and through their lives to see history in a way that less heroic minds failed to grasp.

Butterfield is also concerned to find an answer to the question whether there can be perceived in history some evidence of a divine purpose. He considers episodes such as those of the exile of the Jewish people in Babylon, when a religious people were able to wring victories even out of the extremity of defeat and disaster, so that by virtue of a religious faith they turned their national tragedy into one of the creative episodes of world history.

From his personal study of history he does find that many thousands of individuals can weave a pattern that is better than they know, and that if their aspirations are attuned to values that lie outside history, their endeavours are also turned to ends not realized. On the other hand a powerful tyrant, such as Hitler, may impose his megalomaniac ideas so firmly upon a generation that he will affect the whole current of history; but, if his ideas are opposed to the providential order of God, all they achieve is destructive and negative. Thus false ideas of Race, Blood, and Soil achieve nothing except the destruction of the fertility of the soil, the spilling of blood, and the confusion of races.

Butterfield sees that his providential order in history finds a unique individual expression in the life and death of Jesus; for in this life, God was able to speak to men in terms which even in their limited creatureliness they could understand. This historic life gave men a new insight into the nature of reality and of God. God could not in future be thought of as a shapeless cause, a force making for righteousness, but as a person able to come into Time from the Timeless. And so in the first century of our era, Jesus lived His heroic, lovable life, and in sentences that come to us as if winged, preached His doctrine of universal love. For Butterfield it is the Jesus of History who gives meaning to all that went before, and to all that will follow, until history ends.

Arnold Toynbee's study of history also leads him in the end to the Jesus of history, but by a more complicated route. He too finds that the source of action in history is the creative individual. In developing civilizations, many of which he considers in turn, he shows that a creative minority finds the victorious response to some severe challenge and this response of the minority then spreads by a mimesis until it has affected the whole of a civilization. This is true of the developing civilizations of history, but there are many examples of disintegrating civilizations and then, Toynbee finds, the creative individual has to play the part of a saviour. The saviours of history are of four types. There is the saviour with a sword. Toynbee gives many examples of saviours with swords who fail to save. The second type of saviour he calls the saviour with a 'time-machine'; that is 'those archaist and futurist saviours, who, regarding the present condition and prospects of their societies as irreparable, seek salvation in a return to an idealized past or in a plunge into an idealized future'. Here again, Toynbee shows the futility and destructiveness of both archaism and futurism. The third type of saviour is the philosopher-king, and in such characters as Marcus Aurelius, Frederick of Prussia, or Asoka, Toynbee shows that these saviours too are doomed to failure because they attempt to unite two contrary natures in a single person. Finally, there is the saviour who is a god incarnate in a man. Husayn for Islamic, Adonis for Syriac, Balder for Scandinavian, Attis for Hittite, Tammuz for Sumeric, Zagreus for Minoan, and Buddha for Chinese civilizations all suffered sacrificially to redeem humanity. These all announced themselves, or were announced to be, of divine origin. Their claims to Godhead seem often substantial;

it is their manhood that is dubious—Balder is boastful, Adonis rash, Husayn blind to coming disaster. The verdict of history has been to find only Jesus without human fault, even when His claims to divinity have been rejected.

Toynbee concludes his examination of the saviours of history in these words:

> When we set out on this quest we found ourselves moving in the midst of a mighty host, but, as we have pressed forward, the marchers, company by company, have fallen out of the race. The first to fall were the swordsmen, the next the archaists and futurists, the next the philosophers, until only gods were left in the running. At the final ordeal of death, few even of these would-be saviour-gods have dared to put their title to the test by plunging into the icy river. And now, as we stand and gaze with our eyes fixed upon the farther shore, a single figure rises from the flood and straightway fills the whole horizon.

10

The Unity of Knowledge

ARTS AND SCIENCE

NO ONE could deny that the unity of knowledge, as it was understood by the educated Greek of the fifth century B.C. or the medieval scholar of the thirteenth century A.D., was broken and lost in the last century. There were many reasons for this. The tremendous increase in all branches of human knowledge was one; the need of the modern world for specialists was another. The secularization of the institutions of learning in the seventeenth century, the broadening of the field of knowledge by the encyclopaedists of the eighteenth century, and the rift that grew up in the nineteenth century between science and letters, are all partial explanations.

In the present century, in the universities particularly, there is a growing awareness of the weakness produced by these divisions and many tentative efforts have been made to develop a new unity of knowledge. One example of this is the attempt to break down the old rigid division between the arts and the sciences, for it is realized that it impoverishes both, so that in a modern university the arts studies tend to become conservative and sterile, whilst science studies are narrow and divorced from human purposes. Not a scientist, but a professor of English, Professor Dobrée, has written of arts' faculties and the 'sterile scholarship there of continually grubbing up new but unimportant facts'; of the 'linguistic grind, of slogging away at languages dead or alive because this is good discipline'. 'Most university teachers of ancient matters (there are brilliant exceptions)', he writes, 'are addicts of the past; they are conservative in the wrong, the most deadly sense, forgetting that a living tradition does not stand still, but like every other thing that is alive, it changes and grows.' His final judgement is even more critical:

> At present, especially in the Arts' faculties of the provincial universities, where most of the students are destined to be teachers, there is, broadly speaking, no end. It is a circular process. The student learns a subject that he may teach that subject, in order that that subject may continue to be taught. It is largely a self-contained system, making little impact on the outer world, and hardly affected by it: almost divorced from life, such influence as it has is a deadening one. The subjects themselves bear small relation to life as it is lived now, though a good deal to life as it used to be lived.

At the same time, in science, the advancement of knowledge is often thought to exist wholly in discoveries of fact or theory or technology. Divorced from a concern for human values and purposes, the advancement of knowledge may be sterile or even positively dangerous to the spirit of man, and the scientist, like the man who puts on dark glasses so that he may be able to see the sun, but who keeps them on when he looks at his friends, fails to see human issues as they really are. The strongly analytical methods of science may prevent the scientist from seeing those human activities which can only be appreciated as wholes, and which cease to exist if they are taken to pieces. Disciplined to respond to a limited area of the non-personal, emotion and spirit may become atrophied through disuse. The danger exists that the scientific planner in a welfare state will try to manipulate people like things. To be ignorant of the adventure of mankind, with all its warnings and encouragement, is to be ignorant of man and his immortal creations; it is to produce a man who knows everything about his subject except its ultimate purpose and his place in the cosmos. Man has a body and lives in a material world, but also, as Newman wrote, 'He is a being of genius, passion, intellect, conscience and power. He exercises these gifts in various ways, in great deeds, in great thoughts, in heroic acts, in hateful crimes. He founds states, he builds cities, he rules his kind, he creates vast ideas.' A knowledge of these aspects of life is essential to those who wish to understand human problems and take their share in tackling them.

The leading teachers of science are well aware of the loss to science itself of a too narrow scientific education. Sir Josiah Stamp has said that 'scientific knowledge is sometimes like the gold which is dug up with immense pains in one country only to be buried in the vaults of another'. New scientific knowledge is of no use unless it is absorbed by others who can build it into the growing fabric of science and life. Increasing specialism leads to the imperfect conveyance of new knowledge from one mind to another. Literature and philosophy should play a far larger part in the scientist's curriculum. Sir Lawrence Bragg, lately the Director of the Cavendish Laboratory, Cambridge, writes that

> both school and university teachers of science feel that we have somehow become involved in a system that is forcing us, against our desire, to make specialization in education both too intense and too premature. We have not yet reached agreement that arts and science are equally important components of a good education, though I think a strong case might be made out for their being so.

Quite apart from its harmful effects, the division between science and the humanities is unreal. Goethe, following the pattern set by Leonardo da Vinci, was as capable of discovering the inter-maxillary bone in the skull as of writing *The Sorrows of Werther*. An obvious example of a humane study today is that of Greek. But Greek was originally studied because it was a treasure-trove of the science which Europe had lost for a thousand years. Until the fifteenth century, Greek was almost entirely unknown in Western Europe. The impulse to learn Greek was scientific rather than humanist, and the judgement on which it was based practical rather than aesthetic. The educational innovators who fought to introduce Greek into the schools had to fight all the literary obscurantism, which for so long had denied to Western learning the benefits of Greek science. In the first instance it was not to study Aeschylus or to appreciate the Parthenon that man learnt Greek, but to read Euclid, Archimedes, Aristarchus, Hippocrates, Galen, and Democritus.

How can this fatal dichotomy in our intellectual life be cured? A beginning must be made in the secondary schools. There are many signs that the time is ripe for a reform in the curriculum of the secondary school, for this has grown to its present amorphous collection of subject specialisms as a result of historical accretion.

THE SECONDARY SCHOOL

Most secondary schools still carry with them some of the deposits from their Latin origin. Rhetoric hardly exists in the old form, but grammar and Latin do. To this curriculum the humanists added Greek, mathematics, science, and music. Then the great reforming headmasters of the nineteenth century added the modern studies of history, geography, and modern languages. Later the sciences fought for recognition, until physics, chemistry, and biology became established departments. With the development of subject specialisms, a few of the older and basic studies like English, religious knowledge, and physical education, which had previously been dealt with in a general way, became new, departmentalized and competing specialisms. No human child could follow every one of these specialist teachers in the secondary school along their separate paths, and so, in many, a false and unreal division of humanist and scientific studies grew up to simplify the crowded scene.

Another symptom of the malaise of the secondary school is the grave shortage all over the world of teachers of science and mathematics. If this were to result in a reversal of the trend which has produced a growing number of great scientists and technologists, it would be tragic indeed, for we stand within sight of a great new era of prosperity and creativeness. The atom is thousands of times more powerful as a source of energy than that which we have until now derived from the burning of coal. Aeroplanes travel ten times as fast as trains, and rockets may yet travel a hundred times as fast. Machines replaced the sixteen-hour day of the wretched child worker by the forty-hour week of the leisurely adult, because, with a machine, one man can do the work of ten. Our new electronic computers and servo-mechanisms can replace brains and muscles so that they are not just ten times as efficient as the old machines but a hundred or a thousand times as efficient. The possibility of great leisure is matched by the development of many new media of creativeness, communication, and expression, such as the radio and television. Yet all these new inventions require a larger and larger number of scientists and technologists of higher skill to serve them; they call for a more scientific management of the processes of production; and, most important of all, they require more people with imagination and creative invention to feed the machines that can do many things, but that cannot create. The way out of this jungle is to recast the curriculum of the secondary school in terms of the concentration on a few basic studies which train the mind, give the tools of thought, and impose little burden on the memory.

At the outset perhaps two-thirds of the time of every pupil should be given to the two basic subjects of mathematics with science, and language with literature; so that these are followed by all children throughout their school life, with great thoroughness.

Mathematics is rigorous, disciplined, skilful, and develops the power of conceptual thought. It is the language of science, and its rigour can be balanced by a vivid, practical, and imaginative study of science.

The study of a foreign language is likewise rigorous, disciplined, and skilful, while the study of literature is humane, imaginative, and creative.

If mathematics is to be studied by all, right through the school, its present treatment will need modification. Geometry is often disliked because it is started too soon. Even arithmetic is generally begun at too tender an age. In the lower classes of the secondary school, when boys and girls are eager, realistic, and practical, it should be based on measurement and the mathematics of everyday life, accompanied by much laboratory and field work. In the higher classes, simple statistics, the study of wave-motion, so necessary in modern physics, and some of the exciting mathematics of space-travel should be added to the more orthodox mathematics.

Growing out of general science should come three or four years of the study of, for the majority, two of the sciences. There is not time for more, except for those whose future in medicine is already determined.

The study of a foreign language will only be successfully begun when it is preceded by two years of study in the Junior School. Young children of ten or eleven learn a foreign language with amazing quickness if it is not at this stage studied very formally. This is the experience of teachers in bi-lingual countries like Switzerland, Wales, and Uganda. This first foreign language should be a living language. Only if this is so can a suitably vivid and informal beginning be made with young children. But by the age of thirteen a second language can be begun, and for the majority I believe this should be Greek, because of its magnificent literature, its scientific content, and its influence on European philosophy. For the future historians and lawyers, however, Latin would be a more suitable choice and, of course, much of the legacy of Athens has come, and can come, to us from Rome.

These two studies, the mathematical and the linguistic, should form the massive basis of the work of the secondary school, and absorb the majority of the pupil's working hours.

There are also two other important branches of learning, and these are what I have called the creative arts and the social studies. These two, together with the basic scientific and humanist specialisms, I should regard as the only four subjects to be followed in the secondary school.

In the field of creative arts I should ask every child to choose, in any one school year, one activity from among the four basic creative arts of music, art, drama, and dance. All of these in their 'fine frenzied' development are very time-consuming, and in any one year even the most artistic child will hardly find time for more than one.

Music, as I envisage it, should always include both choral and instrumental work, reading and writing of music, as well as some study of its history.

Dance, again, should be eclectic, and include a study of its history and geography.

Art is still often narrowly interpreted to mean painting, but it can include work in one of many media and, particularly if it includes architecture, it will include also the historical aspects of art. It should also include practical work and craftsmanship developed in a chosen field, it may be of boat-building or motor-mechanics.

Drama could include not only the writing and appreciation of plays, but also of the writing and appreciation of poetry.

The creative arts are important because an education concerned only with the training of the intellect would shut man off from those sources of inspiration on which he depends for his progress. Music and the arts should not be thought of as rather special subjects to be studied by unusual boys and girls. In order to meet the great responsibilities of modern life, two things are required: one is love—a steady determination of the will, directed towards fellowship; the other is an awakened imagination—a creative imagination. The growth of the imagination takes place when children respond to great literature, music, art, drama, and dance. Particularly through the active participation in these arts, even if that participation is at a relatively humble level, do children learn to see beyond the material media some pattern or design that is significant. So trained, later on in adult life, when faced with the disordered circumstances of everyday life, they may be able to bring to bear upon it the gift of creative imagination, and so work as to reveal the underlying meaning, order, or beauty beneath the surface, for the future is shaped by those who see what is significant beneath the baffling surface, and have the will to bring it to birth.

The fourth and last of the divisions of the secondary school curriculum I have called social studies, but I mean by this term something much wider and deeper than what is now called by such names as history or geography or religious knowledge.

Recently, a questionnaire was circulated to a very large group of school children asking them to arrange the subjects of the curriculum in their order of preference. The subject receiving the fewest votes was religious knowledge. It is also, amongst teachers, something of a Cinderella amongst the subjects. It is sometimes thought of as not really academically respectable, whilst its subject matter may be thought of as difficult in itself and very difficult to present to children.

Religious education might take its proper place in the curriculum if the present false division between secular and religious history were removed. T. S. Eliot, the dramatist, has spoken of the dreary history he learnt at school. For him, he has said, history meant the 'little grey books of notes' which enabled him to answer examination questions. What sort of questions? Here are two taken from a recent General Certificate paper:

1. To what extent did Austrian policy affect the course of the War of the Spanish Succession? and
2. What difficulties confronted James I on his accession to the throne in 1603?

This is adult, scientific history, the history of cause and effect, of analysis and synthesis, scientific, factual, and political, instead of the romantic, ethical, spiritual history children really need.

Miss Madely in her book *History as a School of Citizenship*, writing as a teacher of experience, says of history: 'Its factors are too complex and too difficult for isolation and abstraction; and it demands too much initial grind to be a facile starting place for originality in imagination and creative expression. Science will serve the one purpose better, and literature the second.'

It was Whitehead, the scientist, who saw clearly the way in which history should be learnt when he wrote: 'Moral education is impossible without the habitual vision of greatness.' To see visions of greatness we must learn history in a certain way—the ethical, romantic way; not as outlines, or cause and effect, or developing economic and political structures, but as the record of the best things that have been done and suffered and written in the world. This means primarily a study of the makers of civilization; of the men of action like Charlemagne, Lincoln, and Churchill; and of men of thought like St. Francis, Faraday, and Schweitzer; and of men of vision like Plato, Abelard, and Pasteur. Such a study is by no means mere biography, for it will also include the stories of those crucial periods in history when forces of good and evil were in conflict, such as the Exodus from Egypt, Pericles and the Peloponnesian War, or the Abolition of Slavery in Africa. It will include selections from the Bible, Shakespeare, and Burke; from great speeches by Lincoln, Masaryk, and Roosevelt; from novels of Austen, Dickens, and Kipling; from ballads, epics, and poems; from all those sources that show the greatness and littleness of man. It was such an ethical–romantic approach to history which gave to the work of the Scandinavian Folk High Schools the dynamic power which made them the strongest force in social betterment, changing a whole people in Denmark from a torpor like death into one of the most intelligent and successful farming communities in Europe.

In such a treatment of history, the story of the amazing persistence of the Jews in the face of every attempt to destroy them as a people; the story of the carpenter of Nazareth, and of the convictions of a few Jewish peasants in a minor Roman dependency which changed the world; all of these will fall naturally into place on the larger canvas of the story of man.

In such a study, when it touches the history of the country of their birth, children may forget the causes of the War of the Spanish Succession or the difficulties of poor James I, and remember of their country only, as Thucydides said, 'that her greatness was won by men of courage who laid their powers at her feet as their fairest offering'.

It is the spiritual element that is lacking in so much of the teaching of our adolescents. This new treatment of the curriculum of the secondary school may restore it, helping children to understand, not the science of history, but the science of good and evil, giving them values and standards and the will to live by them.

This reformed syllabus, sketched briefly in outline, would have several great advantages. The important minority proceeding to universities would come up with a balanced yet thorough education in both science and the humanities, ready now for specialization. The fact that all would come with mathematics would mean that very many more would be free to choose a science course than is now the case, and this would go to the heart of the problem of the shortage of scientists. The scientists, having for the most part studied Greek and Greek literature, would have been given an interest in human beings that should prevent them for ever from taking a narrow or impersonal view of their science. The humanists would have more than a nodding acquaintance with the facts of science; they would have also some appreciation of its methods and possibilities.

The majority, leaving school for work or further training, would, with mathematics, one, two, or three sciences, two languages, a creative art or craft, and the broad yet purposive culture represented by the social studies, be in a good position to begin to undertake almost any kind of further training, or to play their part in a world greatly influenced by scientific inventions.

All, because they would have had the time to study a few subjects at depth rather than many superficially, would have some standards by which to judge all intellectual effort in the future.

Such a reform could by no means be introduced quickly. There are too few teachers of mathematics, science, and classics for this to be possible. But if the descending spiral of weakness is to be turned upwards, a beginning must be made somewhere and at some time. There are Arts graduates who have studied mathematics sufficiently so that with a refresher course they could teach some of the lower forms in the school. There are similarly English and history graduates who could be trained to be teachers of languages. Once the process had begun, it could gather pace, and inevitable delay might give time for new methods to be watched and consolidated.

Only one final question remains to be asked. Is this combination of the humanistic tradition with the scientific to be given to all adolescents? Or are some of a different type? Do they need something essentially practical, on altogether different lines? My answer to this questions is clear and unequivocal. There will be degrees of facility with which adolescents can follow the curriculum I have sketched, but I believe *all* can do so with profit and should do so.

The educated man must be able to move with facility in two spheres. He must be able to appreciate the achievements of the human race in literature, science, art, and social living. And, secondly, he must be able to move with some facility in the realm of abstract ideas. Conceptual thinking distinguishes man from the animal. The ability to frame concepts, to deal with abstractions, to think, is the mark of the educated man. This power is present in man from birth. As soon as he is able to lisp the words 'This milk is hot' he is engaged in conceptual thinking. Learning to read is a great stimulus to conceptual thinking. But this power to think can atrophy for lack of use and development. If a child finds no books to read in his home, or listens to conversation that is barely above the level of signalling; if he does not start to learn a foreign language in the junior school, or begin simple mathematics there too, then it will not be surprising if, at the dawn of adolescence, his powers of abstract thought are atrophied, and he is thought fit only for a simple practical education in some special type of secondary school. The time for such specialization is not at adolescence. After leaving school he may go on to specialize—at a polytechnic, or a medical school, or at the university, or on the job, whatever it may be. But the secondary school curriculum should not be based on the idea of specialization, nor on a defeatist view of adolescent potentialities. There will, indeed, be children whose minds have been so crippled by early miseducation that they need special treatment. But many of these will show striking powers of recuperation, when (as is so rarely possible) they are taught by teachers well educated enough to give a combined humanist and scientific education. And these children need as much as any that rigorous, disciplined, and examined work should be demanded of them. When this happens they begin to stretch minds atrophied by a soft curriculum, or an inferior practical education, or by an overdose of television and cheap literature. For these weaker brethren, the creative arts, the social studies, one foreign language rather than two, general science rather than the separate sciences and the mathematics of everyday life may be all they can follow with success. But any large secondary school ought to be able to offer such options to them.

If the secondary school is thought of in narrower terms than these, as a place for only a small intellectual élite, it will not produce (and in many parts of the world, it is not producing) sufficient teachers to meet the needs of a world demanding more and better education for its children, and a world in which modern technological developments make possible a much longer period of educational life for the children of all citizens as well as more leisure for its adults.

Those who are concerned in one way or another with the education of the next generation, whether as parents or teachers, as administrators or politicians, need, particularly at this point in time and during the second half of the twentieth century, to strive to find some such unity of thought and action as has driven its author to write this book; and to the degree to which they find it, to try to give to the next generation a simpler, a more integrated, and a more spiritual education than they have yet received.

A PHILOSOPHY
FOR THE TEACHER

About half of the author's life has been spent teaching children of all ages in many different types of school – in an African 'bush' school in Uganda, in a secondary school under the communists in China, in a Junior High School in a Canadian fishing village and in a large English Public School. In Part I, *The Child*, he describes what he believes are the fundamental truths about growing children and human personality; truths that are independent of national cultures but particularly relevant to life as it will be lived by the next generation in most countries of the world.

The other half of the author's life has been spent teaching philosophy in British or African universities and his aim in Part II, *Human Knowledge*, is to bring to parents, teachers and college lecturers the reasons for selecting what should be taught to children and how it should be taught.

The general aim of this book says Professor Fletcher, 'is to enable all who are concerned in one way or another with education . . . to try to give to the next generation a simpler, a more integrated and a more spiritual education than they have yet received'.

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